



SEQUENCE LISTING

<110> Doxsey, Stephen J.

<120> CENTROSOME PROTEINS AND USES THEREOF

<130> 07917-162001

<140> US 10/663,433

<141> 2003-09-15

<150> US 60/410,520

<151> 2002-09-13

<160> 30

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<210> 1

<211> 6978

<212> DNA

<213> Homo sapiens

<220>

<221> CDS

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Ser Ser Ser His Ser Pro Ile Pro Ser Ser Met Ser Asn Met Arg Ser	
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agg tca ctt tca cct ttg att gga tca gag act cta cct ttt cat tct	144
Arg Ser Leu Ser Pro Leu Ile Gly Ser Glu Thr Leu Pro Phe His Ser	
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gga gga cag tgg tgt gag caa att gag att gca gat gaa aac aat atg	192
Gly Gly Gln Trp Cys Glu Gln Ile Glu Ile Ala Asp Glu Asn Asn Met	
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Leu Leu Asp Tyr Gln Asp His Lys Gly Ala Asp Ser His Ala Gly Val	
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aga tat att aca gag gcc ctc att aa ^f aaa ctt act aaa cag gat aat	288
Arg Tyr Ile Thr Glu Ala Leu Ile Lys Lys Leu Thr Lys Gln Asp Asn	
85 90 95	

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gta ctg aat ctc agc tat aat cta ata ggg aag att gaa aag ttg gac Val Leu Asn Leu Ser Tyr Asn Leu Ile Gly Lys Ile Glu Lys Leu Asp 130 135 140			432
aag ctg tta aaa tta cgt gaa ctc aac tta tca tat aac aaa atc agc Lys Leu Leu Lys Leu Arg Glu Leu Asn Leu Ser Tyr Asn Lys Ile Ser 145 150 155 160			480
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gca gga aat gaa att gag cat att cca gta tgg tta ggg aag aag tta Ala Gly Asn Glu Ile Glu His Ile Pro Val Trp Leu Gly Lys Lys Leu 180 185 190			576
aaa tct ttg cga gtc ctc aat ttg aaa ggc aac aag ata tca tcg ctc Lys Ser Leu Arg Val Leu Asn Leu Lys Gly Asn Lys Ile Ser Ser Leu 195 200 205			624
caa gat ata agc aag ttg aaa ccg ctt caa gat ttg att tct ctg atc Gln Asp Ile Ser Lys Leu Lys Pro Leu Gln Asp Leu Ile Ser Leu Ile 210 215 220			672
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cag aag acc ata gaa tta aca cga gca tgt cag aag caa tat gag ctg	1056
Gln Lys Thr Ile Glu Leu Thr Arg Ala Cys Gln Lys Gln Tyr Glu Leu	
340 345 350	
gaa cag gaa ttg gcc ttt tat aaa att gat gct aaa ttt gag cca cta	1104
Glu Gln Glu Leu Ala Phe Tyr Lys Ile Asp Ala Lys Phe Glu Pro Leu	
355 360 365	
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Asn Tyr Tyr Pro Ser Glu Tyr Ala Glu Ile Asp Lys Ala Pro Asp Glu	
370 375 380	
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Ser Pro Tyr Ile Gly Lys Ser Arg Tyr Lys Arg Asn Met Phe Ala Thr	
385 390 395 400	
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Glu Ser Tyr Ile Ile Asp Ser Ala Gln Ala Val Gln Ile Lys Lys Met	
405 410 415	
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Glu Pro Asp Glu Gln Leu Arg Asn Asp His Met Asn Leu Arg Gly His	
420 425 430	
aca cca ctg gac acg caa ctg gaa gac aaa gaa aaa ata agt gca	1344
Thr Pro Leu Asp Thr Gln Leu Glu Asp Lys Glu Lys Lys Ile Ser Ala	
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Ala Gln Thr Arg Leu Ser Glu Leu His Asp Glu Ile Glu Lys Ala Glu	
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caa caa att ttg aga gct act gaa gaa ttt aaa caa ctg gaa gaa gct	1440
Gln Gln Ile Leu Arg Ala Thr Glu Glu Phe Lys Gln Leu Glu Glu Ala	
465 470 475 480	
ata caa cta aaa aag att tca gaa gca ggg aaa gac ctt ctt tac aag	1488
Ile Gln Leu Lys Lys Ile Ser Glu Ala Gly Lys Asp Leu Leu Tyr Lys	
485 490 495	
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Gln Leu Ser Gly Arg Leu Gln Leu Val Asn Lys Leu Arg Gln Glu Ala	
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Leu Asp Leu Glu Leu Gln Met Glu Lys Gln Lys Gln Glu Ile Ala Gly	
515 520 525	
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Lys Gln Lys Glu Ile Lys Asp Leu Gln Ile Ala Ile Asp Ser Leu Asp	
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Ser Lys Asp Pro Lys His Ser His Met Lys Ala Gln Lys Ser Gly Lys	
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aag gac ctt gaa gaa cag ctt act gaa ggc cag ata gca gca aat gaa Lys Asp Leu Glu Glu Gln Leu Thr Glu Gly Gln Ile Ala Ala Asn Glu 595 600 605	1824
gcc ctg aag aag gat tta gaa ggt gtt atc agt ggg ttg caa gaa tac Ala Leu Lys Lys Asp Leu Glu Gly Val Ile Ser Gly Leu Gln Glu Tyr 610 615 620	1872
ctg ggg acc att aaa ggc cag gca act cag gcc cag aat gag tgc agg Leu Gly Thr Ile Lys Gly Gln Ala Thr Gln Ala Gln Asn Glu Cys Arg 625 630 635 640	1920
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gag cag gag aga gac cag ctg gaa ata gtt gcc atg gat gca gaa aat Glu Gln Glu Arg Asp Gln Leu Glu Ile Val Ala Met Asp Ala Glu Asn 660 665 670	2016
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cag ctc aag gaa gag ttg gaa aaa gta aca aga ctt acc cag tta gaa Gln Leu Lys Glu Leu Glu Lys Val Thr Arg Leu Thr Gln Leu Glu 725 730 735	2208
caa tca gcc ctt caa gca gaa ctt gag aag gaa agg caa gcc ctc aag Gln Ser Ala Leu Gln Ala Glu Leu Glu Lys Glu Arg Gln Ala Leu Lys 740 745 750	2256
aat gcc ctt gga aaa gcc cag ttc tca gaa gaa aag gag caa gag aac Asn Ala Leu Gly Lys Ala Gln Phe Ser Glu Glu Lys Glu Gln Glu Asn 755 760 765	2304
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Leu Lys Gln Gln Leu Lys Asp Phe Gln Asn His Leu Asn His Val Val	
785 790 795 800	
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Asp Gly Leu Val Arg Pro Glu Glu Val Ala Ala Arg Val Asp Glu Leu	
805 810 815	
aga aga aaa ctg aaa tta gga act ggg gaa atg aac atc cat agt cct	2496
Arg Arg Lys Leu Lys Leu Gly Thr Gly Glu Met Asn Ile His Ser Pro	
820 825 830	
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Ser Asp Val Leu Gly Lys Ser Leu Ala Asp Leu Gln Lys Gln Phe Ser	
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Glu Ile Leu Ala Arg Ser Lys Trp Glu Arg Asp Glu Ala Gln Val Arg	
850 855 860	
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Glu Arg Lys Leu Gln Glu Glu Met Ala Leu Gln Gln Glu Lys Leu Ala	
865 870 875 880	
act gga caa gaa gag ttc agg cag gcc tgt gag aga gcc ctg gaa gca	2688
Thr Gly Gln Glu Glu Phe Arg Gln Ala Cys Glu Arg Ala Leu Glu Ala	
885 890 895	
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Arg Met Asn Phe Asp Lys Arg Gln His Glu Ala Arg Ile Gln Gln Met	
900 905 910	
gag aat gaa att cac tat ttg caa gaa aat cta aaa agt atg gag gaa	2784
Glu Asn Glu Ile His Tyr Leu Gln Glu Asn Leu Lys Ser Met Glu Glu	
915 920 925	
atc caa ggc ctt aca gat ctc caa ctt cag gaa gct gat gaa gag aag	2832
Ile Gln Gly Leu Thr Asp Leu Gln Leu Gln Glu Ala Asp Glu Glu Lys	
930 935 940	
gag aga att ctg gcc caa ctc cga gag tta gag aaa aag aag aaa ctt	2880
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Glu Asp Ala Lys Ser Gln Glu Gln Val Phe Gly Leu Asp Lys Glu Leu	
965 970 975	
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Lys Lys Leu Lys Lys Ala Val Ala Thr Ser Asp Lys Leu Ala Thr Ala	
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Glu Leu Thr Ile Ala Lys Asp Gln Leu Lys Ser Leu His Gly Thr Val	
995 1000 1005	
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Met Lys Ile Asn Gln Glu Arg Ala Glu Glu Leu Gln Glu Ala Glu Arg	

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gct gag atc gaa ctc ctg cag aat ctc ctc agg cag aag ggg gag cag			3168
Ala Glu Ile Glu Leu Leu Gln Asn Leu Leu Arg Gln Lys Gly Glu Gln			
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ttt cga ctt gag atg gag aaa aca ggt gta ggt act gga gca aac tca			3216
Phe Arg Leu Glu Met Glu Lys Thr Gly Val Gly Thr Gly Ala Asn Ser			
	1060	1065	1070
cag gtc cta gaa att gag aaa ctg aat gag aca atg gaa cga caa agg			3264
Gln Val Leu Glu Ile Glu Lys Leu Asn Glu Thr Met Glu Arg Gln Arg			
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aca gag att gca agg ctg cag aat gta cta gac ctc act gga agt gac			3312
Thr Glu Ile Ala Arg Leu Gln Asn Val Leu Asp Leu Thr Gly Ser Asp			
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Val Tyr Ser Pro Ile Arg Ser Gly Leu His Lys Leu Phe Pro Ser Arg			
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Gln Glu Glu Pro Pro Phe Val Pro Pro Pro Gly Tyr Met Met Tyr Thr			
	1235	1240	1245

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Val Leu Pro Asp Gly Ser Pro Val Pro Gln Gly Met Ala Leu Tyr Ala	
1250 1255 1260	
cca cct cct ccc ttg cca aac aat agc cga cct ctc acc cct ggc act	3840
Pro Pro Pro Pro Leu Pro Asn Asn Ser Arg Pro Leu Thr Pro Gly Thr	
1265 1270 1275 1280	
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Val Val Tyr Gly Pro Pro Pro Ala Gly Ala Pro Met Val Tyr Gly Pro	
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Pro Pro Pro Asn Phe Ser Ile Pro Phe Ile Pro Met Gly Val Leu His	
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Cys Asn Val Pro Glu His His Asn Leu Glu Asn Glu Val Ser Arg Leu	
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1330 1335 1340	
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Met Arg Ala Ser Lys Arg Gln Ser Glu Lys Glu Met Glu Glu Leu His	
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His Asn Ile Asp Asp Leu Leu Gln Glu Lys Lys Ser Leu Glu Cys Glu	
1365 1370 1375	
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Phe Ile Asp Gly Asn Val Glu Ser Leu Met Thr Glu Leu Glu Ile Glu	
1395 1400 1405	
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Lys Ser Leu Lys His His Glu Asp Ile Val Asp Glu Ile Glu Cys Ile	
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Glu Lys Thr Leu Leu Lys Arg Arg Ser Glu Leu Arg Glu Ala Asp Arg	
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cag cag ctc caa gaa aaa cga gaa gca gta aac tca ctg cag gag gaa Gln Gln Leu Gln Glu Lys Arg Glu Ala Val Asn Ser Leu Gln Glu Glu 1860 1865 1870	5616
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cac acc acc aag cat cag gat gtg ttg ctc agt gag cag acc cga ctc His Thr Thr Lys His Gln Asp Val Leu Leu Ser Glu Gln Thr Arg Leu 1890 1895 1900	5712
cag aag gac atc agt gaa tgg gca aat agg ttt gaa gac tgt cag aaa Gln Lys Asp Ile Ser Glu Trp Ala Asn Arg Phe Glu Asp Cys Gln Lys 1905 1910 1915 1920	5760
gaa gag gag aca aaa caa caa caa ctt caa gtg ctt cag aat gag att Glu Glu Glu Thr Lys Gln Gln Gln Leu Gln Val Leu Gln Asn Glu Ile	5808

1925	1930	1935	
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gag cgt gtt agg act ctg cag gaa gag gag agg tgg tgt gag agc ctg Glu Arg Val Arg Thr Leu Gln Glu Glu Glu Arg Trp Cys Glu Ser Leu 2005	2010	2015	6048
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caa ttg gtg gag aaa tca ggt gag ctg ttg gcc ctc cag aaa gag gca Gln Leu Val Glu Lys Ser Gly Glu Leu Leu Ala Leu Gln Lys Glu Ala 2035	2040	2045	6144
gat tct atg agg gca gac ttc agc ctt ctg cgg aac cag ttc ttg aca Asp Ser Met Arg Ala Asp Phe Ser Leu Leu Arg Asn Gln Phe Leu Thr 2050	2055	2060	6192
gaa aga aag aaa gct gag aag cag gtg gcc agc ctg aag gaa gca ctt Glu Arg Lys Lys Ala Glu Lys Gln Val Ala Ser Leu Lys Glu Ala Leu 2065	2070	2075	6240
aag atc cag cgg agc cag ctg gag aaa aac ctt ctt gag caa aaa cag Lys Ile Gln Arg Ser Gln Leu Glu Lys Asn Leu Leu Glu Gln Lys Gln 2085	2090	2095	6288
gag aac agc tgc ata caa aag gaa atg gca aca att gaa ctg gta gcc Glu Asn Ser Cys Ile Gln Lys Glu Met Ala Thr Ile Glu Leu Val Ala 2100	2105	2110	6336
cag gac aac cat gag cgg gcc agg cgc ctg atg aag gag ctc aac cag Gln Asp Asn His Glu Arg Ala Arg Arg Leu Met Lys Glu Leu Asn Gln 2115	2120	2125	6384
atg cag tat gag tac acg gag ctc aag aaa cag atg gca aac caa aaa Met Gln Tyr Glu Tyr Thr Glu Leu Lys Lys Gln Met Ala Asn Gln Lys 2130	2135	2140	6432
gat ttg gag aga aga caa atg gaa atc agt gat gca atg agg aca ctt Asp Leu Glu Arg Arg Gln Met Glu Ile Ser Asp Ala Met Arg Thr Leu 2145	2150	2155	6480
		2160	

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Lys Ser Glu Val Lys Asp Glu Ile Arg Thr Ser Leu Lys Asn Leu Asn	
2165 2170 2175	
cag ttt ctt cca gaa cta cca gca gat cta gaa gct att ttg gaa aga	6576
Gln Phe Leu Pro Glu Leu Pro Ala Asp Leu Glu Ala Ile Leu Glu Arg	
2180 2185 2190	
aac gaa aac cta gaa gga gaa ttg gaa agc ttg aaa gag aac ctt cca	6624
Asn Glu Asn Leu Glu Gly Glu Leu Glu Ser Leu Lys Glu Asn Leu Pro	
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ttt acc atg aat gag gga cct ttt gaa gaa aaa ctg aac ttt tcc caa	6672
Phe Thr Met Asn Glu Gly Pro Phe Glu Glu Lys Leu Asn Phe Ser Gln	
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gtt cac ata atg gat gaa cac tgg cgt gga gaa gca ctc cgg gag aaa	6720
Val His Ile Met Asp Glu His Trp Arg Gly Glu Ala Leu Arg Glu Lys	
2225 2230 2235 2240	
ctg cgt cac cgg gaa gac cga ctc aag gcc caa ctc cga cac tgt atg	6768
Leu Arg His Arg Glu Asp Arg Leu Lys Ala Gln Leu Arg His Cys Met	
2245 2250 2255	
tcc aag caa gca gaa gta tta att aaa gga aag cgg cag aca gag ggc	6816
Ser Lys Gln Ala Glu Val Leu Ile Lys Gly Lys Arg Gln Thr Glu Gly	
2260 2265 2270	
act tta cac agt ttg agg aga caa gta gat gct tta ggg gaa ttg gtc	6864
Thr Leu His Ser Leu Arg Arg Gln Val Asp Ala Leu Gly Glu Leu Val	
2275 2280 2285	
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Thr Ser Thr Ser Ala Asp Ser Ala Ser Ser Pro Ser Leu Ser Gln Leu	
2290 2295 2300	
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Glu Ser Ser Leu Thr Glu Asp Ser Gln Leu Gly Gln Asn Gln Glu Lys	
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Gln Leu Ser Gly Arg Leu Gln Leu Val Asn Lys Leu Arg Gln Glu Ala
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 Leu Asp Leu Glu Leu Gln Met Glu Lys Gln Lys Gln Glu Ile Ala Gly
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 Lys Gln Lys Glu Ile Lys Asp Leu Gln Ile Ala Ile Asp Ser Leu Asp
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 Ser Lys Asp Pro Lys His Ser His Met Lys Ala Gln Lys Ser Gly Lys
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 Glu Gln Gln Leu Asp Ile Met Asn Lys Gln Tyr Gln Gln Leu Glu Ser
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 Lys Asp Leu Glu Glu Gln Leu Thr Glu Gly Gln Ile Ala Ala Asn Glu
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 Ala Leu Lys Lys Asp Leu Glu Gly Val Ile Ser Gly Leu Gln Glu Tyr
 610 615 620
 Leu Gly Thr Ile Lys Gly Gln Ala Thr Gln Ala Gln Asn Glu Cys Arg
 625 630 635 640
 Lys Leu Arg Asp Glu Lys Glu Thr Leu Leu Gln Arg Leu Thr Glu Val
 645 650 655
 Glu Gln Glu Arg Asp Gln Leu Glu Ile Val Ala Met Asp Ala Glu Asn
 660 665 670
 Met Arg Lys Glu Leu Ala Glu Leu Glu Ser Ala Leu Gln Glu Gln His
 675 680 685
 Glu Val Asn Ala Ser Leu Gln Thr Gln Gly Asp Leu Ser Ala Tyr
 690 695 700
 Glu Ala Glu Leu Glu Ala Arg Leu Asn Leu Arg Asp Ala Glu Ala Asn
 705 710 715 720
 Gln Leu Lys Glu Glu Leu Glu Lys Val Thr Arg Leu Thr Gln Leu Glu
 725 730 735
 Gln Ser Ala Leu Gln Ala Glu Leu Glu Lys Glu Arg Gln Ala Leu Lys
 740 745 750
 Asn Ala Leu Gly Lys Ala Gln Phe Ser Glu Glu Lys Glu Gln Glu Asn
 755 760 765
 Ser Glu Leu His Ala Lys Leu Lys His Leu Gln Asp Asp Asn Asn Leu
 770 775 780
 Leu Lys Gln Gln Leu Lys Asp Phe Gln Asn His Leu Asn His Val Val
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 Asp Gly Leu Val Arg Pro Glu Glu Val Ala Ala Arg Val Asp Glu Leu
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 Arg Arg Lys Leu Lys Leu Gly Thr Gly Glu Met Asn Ile His Ser Pro
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 Ser Asp Val Leu Gly Lys Ser Leu Ala Asp Leu Gln Lys Gln Phe Ser
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 Glu Ile Leu Ala Arg Ser Lys Trp Glu Arg Asp Glu Ala Gln Val Arg
 850 855 860
 Glu Arg Lys Leu Gln Glu Glu Met Ala Leu Gln Gln Glu Lys Leu Ala
 865 870 875 880
 Thr Gly Gln Glu Glu Phe Arg Gln Ala Cys Glu Arg Ala Leu Glu Ala
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 Arg Met Asn Phe Asp Lys Arg Gln His Glu Ala Arg Ile Gln Gln Met
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 915 920 925
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Lys Lys Leu Lys Lys	Ala Val Ala Thr	Ser Asp Lys Leu Ala Thr	Ala			
	980	985	990			
Glu Leu Thr Ile Ala Lys	Asp Gln Leu Lys Ser	Leu His Gly Thr Val				
	995	1000	1005			
Met Lys Ile Asn Gln Glu	Arg Ala Glu Glu Leu Gln	Glu Ala Glu Arg				
	1010	1015	1020			
Phe Ser Arg Lys Ala Ala	Gln Ala Ala Arg Asp	Leu Thr Arg Ala Glu				
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Ala Glu Ile Glu Leu Leu	Gln Asn Leu Leu Arg	Gln Lys Gly Glu Gln				
	1045	1050	1055			
Phe Arg Leu Glu Met Glu	Lys Thr Gly Val Gly Thr	Gly Ala Asn Ser				
	1060	1065	1070			
Gln Val Leu Glu Ile Glu	Lys Leu Asn Glu Thr Met	Glu Arg Gln Arg				
	1075	1080	1085			
Thr Glu Ile Ala Arg Leu	Gln Asn Val Leu Asp	Leu Thr Gly Ser Asp				
	1090	1095	1100			
Asn Lys Gly Gly Phe Glu	Asn Val Leu Glu Glu Ile	Ala Glu Leu Arg				
	1105	1110	1115			1120
Arg Glu Val Ser Tyr Gln	Asn Asp Tyr Ile Ser	Ser Met Ala Asp Pro				
	1125	1130	1135			
Phe Lys Arg Arg Gly Tyr	Trp Tyr Phe Met Pro	Pro Pro Pro Ser Ser				
	1140	1145	1150			
Lys Val Ser Ser His Ser	Ser Ser Gln Ala Thr	Lys Asp Ser Gly Val Gly				
	1155	1160	1165			
Leu Lys Tyr Ser Ala Ser	Thr Pro Val Arg Lys Pro	Arg Pro Gly Gln				
	1170	1175	1180			
Gln Asp Gly Lys Glu Gly	Ser Gln Pro Pro Pro	Ala Ser Gly Tyr Trp				
	1185	1190	1195			1200
Val Tyr Ser Pro Ile Arg	Ser Gly Leu His Lys Leu	Phe Pro Ser Arg				
	1205	1210	1215			
Asp Ala Asp Ser Gly Gly	Asp Ser Gln Glu Glu Ser	Glu Leu Asp Asp				
	1220	1225	1230			
Gln Glu Glu Pro Pro Phe	Val Pro Pro Pro Gly Tyr	Met Met Tyr Thr				
	1235	1240	1245			
Val Leu Pro Asp Gly Ser	Pro Val Pro Gln Gly Met	Ala Leu Tyr Ala				
	1250	1255	1260			
Pro Pro Pro Pro Leu Pro	Asn Asn Ser Arg Pro	Leu Thr Pro Gly Thr				
	1265	1270	1275			1280
Val Val Tyr Gly Pro Pro	Pro Ala Gly Ala Pro	Met Val Tyr Gly Pro				
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Cys Asn Val Pro Glu His	His Asn Leu Glu Asn	Glu Val Ser Arg Leu				
	1315	1320	1325			
Glu Asp Ile Met Gln His	Leu Lys Ser Lys Lys	Arg Glu Glu Arg Trp				
	1330	1335	1340			
Met Arg Ala Ser Lys Arg	Gln Ser Glu Lys Glu Met	Glu Glu Leu His				
	1345	1350	1355			1360
His Asn Ile Asp Asp Leu	Leu Gln Glu Lys Lys	Ser Leu Glu Cys Glu				
	1365	1370	1375			
Val Glu Glu Leu His Arg	Thr Val Gln Lys Arg	Gln Gln Gln Lys Asp				
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Phe Ile Asp Gly Asn Val	Glu Ser Leu Met Thr	Glu Leu Glu Ile Glu				
	1395	1400	1405			

Lys Ser Leu Lys His His Glu Asp Ile Val Asp Glu Ile Glu Cys Ile
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 Val Leu Ala Ala Ala Glu Glu Asn Ser Lys Met Glu Gln Ser Asn Leu
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 1825 1830 1835 1840
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 1845 1850 1855
 Gln Gln Leu Gln Glu Lys Arg Glu Ala Val Asn Ser Leu Gln Glu Glu

	1860		1865		1870										
Leu	Ala	Asn	Val	Gln	Asp	His	Leu	Asn	Leu	Ala	Lys	Gln	Asp	Leu	Leu
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His	Thr	Thr	Lys	His	Gln	Asp	Val	Leu	Leu	Ser	Glu	Gln	Thr	Arg	Leu
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Gln	Lys	Asp	Ile	Ser	Glu	Trp	Ala	Asn	Arg	Phe	Glu	Asp	Cys	Gln	Lys
1905					1910					1915					1920
Glu	Glu	Glu	Thr	Lys	Gln	Gln	Gln	Leu	Gln	Val	Leu	Gln	Asn	Glu	Ile
				1925					1930					1935	
Glu	Glu	Asn	Lys	Leu	Lys	Leu	Val	Gln	Gln	Glu	Met	Met	Phe	Gln	Arg
		1940						1945					1950		
Leu	Gln	Lys	Glu	Arg	Glu	Ser	Glu	Glu	Ser	Lys	Leu	Glu	Thr	Ser	Lys
	1955						1960					1965			
Val	Thr	Leu	Lys	Glu	Gln	Gln	His	Gln	Leu	Glu	Lys	Glu	Leu	Thr	Asp
	1970						1975				1980				
Gln	Lys	Ser	Lys	Leu	Asp	Gln	Val	Leu	Ser	Lys	Val	Leu	Ala	Ala	Glu
1985					1990					1995					2000
Glu	Arg	Val	Arg	Thr	Leu	Gln	Glu	Glu	Glu	Arg	Trp	Cys	Glu	Ser	Leu
				2005					2010					2015	
Glu	Lys	Thr	Leu	Ser	Gln	Thr	Lys	Arg	Gln	Leu	Ser	Glu	Arg	Glu	Gln
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Gln	Leu	Val	Glu	Lys	Ser	Gly	Glu	Leu	Leu	Ala	Leu	Gln	Lys	Glu	Ala
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Asp	Ser	Met	Arg	Ala	Asp	Phe	Ser	Leu	Leu	Arg	Asn	Gln	Phe	Leu	Thr
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Lys	Ile	Gln	Arg	Ser	Gln	Leu	Glu	Lys	Asn	Leu	Leu	Glu	Gln	Lys	Gln
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Lys	Ser	Glu	Val	Lys	Asp	Glu	Ile	Arg	Thr	Ser	Leu	Lys	Asn	Leu	Asn
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Gln	Phe	Leu	Pro	Glu	Leu	Pro	Ala	Asp	Leu	Glu	Ala	Ile	Leu	Glu	Arg
	2180						2185				2190				
Asn	Glu	Asn	Leu	Glu	Gly	Glu	Leu	Glu	Ser	Leu	Lys	Glu	Asn	Leu	Pro
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Phe	Thr	Met	Asn	Glu	Gly	Pro	Phe	Glu	Glu	Lys	Leu	Asn	Phe	Ser	Gln
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Ser	Lys	Gln	Ala	Glu	Val	Leu	Ile	Lys	Gly	Lys	Arg	Gln	Thr	Glu	Gly
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Thr	Leu	His	Ser	Leu	Arg	Arg	Gln	Val	Asp	Ala	Leu	Gly	Glu	Leu	Val
	2275						2280				2285				
Thr	Ser	Thr	Ser	Ala	Asp	Ser	Ala	Ser	Ser	Pro	Ser	Leu	Ser	Gln	Leu
	2290					2295				2300					
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Thr Lys Leu Ala His Phe Arg Gln Arg Lys Thr Lys Gly Asp Ser Ser
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His Ser Glu Lys Lys Thr Ala Lys Arg Lys Gly Ser Ala Val Asp Ala
35 40 45

tct gtc cag gag gag agt ccg gta acc aag gag gac agc gca ctc tgt 192
Ser Val Gln Glu Glu Ser Pro Val Thr Lys Glu Asp Ser Ala Leu Cys
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gga gga ggg gac att tgc aaa agc aca tca tgt gac gac acc cct gat 240
Gly Gly Gly Asp Ile Cys Lys Ser Thr Ser Cys Asp Asp Thr Pro Asp
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Gly Ala Gly Gly Ala Phe Ala Ala Gln Pro Glu Asp Cys Asp Gly Glu
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Lys Arg Glu Asp Leu Glu Gln Leu Gln Gln Lys Gln Val Asn Asp His
100 105 110

cct cca gag cag tgt ggg atg ttc aca gtc agt gac cac cca cca gaa 384
Pro Pro Glu Gln Cys Gly Met Phe Thr Val Ser Asp His Pro Pro Glu
115 120 125

cag cat ggg atg ttc aca gtc ggt gac cac cca cca gaa cag cgt ggg 432
Gln His Gly Met Phe Thr Val Gly Asp His Pro Pro Glu Gln Arg Gly
130 135 140

atg ttc aca gtc agt gac cac cca cca gaa cag cat ggg atg ttc aca 480
Met Phe Thr Val Ser Asp His Pro Pro Glu Gln His Gly Met Phe Thr
145 150 155 160

gtc agt gac cac cca cca gaa cag cgt ggg atg ttc aca atc agt gac 528
Val Ser Asp His Pro Pro Glu Gln Arg Gly Met Phe Thr Ile Ser Asp
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Asp	Leu	Glu	Phe	Lys	Phe	Lys	Glu	Ser	Glu	Lys	Glu	Lys	Gln	Leu	Glu	
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Leu	Glu	Asn	Leu	Gln	Ala	Ser	Tyr	Glu	Asp	Leu	Lys	Ala	Gln	Ser	Gln	
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Glu	Glu	Ile	Arg	Arg	Leu	Trp	Ser	Gln	Leu	Asp	Ser	Ala	Arg	Thr	Ser	
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Arg	Gln	Glu	Leu	Ser	Glu	Leu	His	Glu	Gln	Leu	Leu	Ala	Arg	Thr	Ser	
				485					490						495	
cgt	gtg	gaa	gat	tta	gaa	cag	ctg	aag	cag	cga	gaa	aaa	acc	cag	cat	1536
Arg	Val	Glu	Asp	Leu	Glu	Gln	Leu	Lys	Gln	Arg	Glu	Lys	Thr	Gln	His	
			500					505					510			
gag	tcc	gaa	ctg	gag	caa	ctg	agg	att	tat	ttt	gaa	aag	aag	tta	agg	1584
Glu	Ser	Glu	Leu	Glu	Gln	Leu	Arg	Ile	Tyr	Phe	Glu	Lys	Lys	Leu	Arg	
			515					520					525			
gat	gct	gag	aaa	act	tac	caa	gaa	gac	cta	acc	ctg	tta	cag	cag	agg	1632
Asp	Ala	Glu	Lys	Thr	Tyr	Gln	Glu	Asp	Leu	Thr	Leu	Leu	Gln	Gln	Arg	
			530					535					540			
ctg	cag	ggg	gcg	agg	gaa	gat	gct	ctt	ctg	gac	tct	gtg	gaa	gtt	ggg	1680
Leu	Gln	Gly	Ala	Arg	Glu	Asp	Ala	Leu	Leu	Asp	Ser	Val	Glu	Val	Gly	
					550					555					560	
ttg	tcc	tgt	gtg	ggt	tta	gaa	gag	aaa	cct	gag	aaa	gga	aga	aaa	gat	1728
Leu	Ser	Cys	Val	Gly	Leu	Glu	Glu	Lys	Pro	Glu	Lys	Gly	Arg	Lys	Asp	
				565					570						575	
cac	gtt	gat	gaa	ctc	gag	cct	gag	cga	cat	aag	gag	agc	ctg	cca	cgc	1776
His	Val	Asp	Glu	Leu	Glu	Pro	Glu	Arg	His	Lys	Glu	Ser	Leu	Pro	Arg	
			580					585					590			
ttc	cag	gcg	gag	tta	gaa	gaa	agc	cac	agg	cac	cag	ctg	gaa	gcg	ctg	1824
Phe	Gln	Ala	Glu	Leu	Glu	Glu	Ser	His	Arg	His	Gln	Leu	Glu	Ala	Leu	
			595					600					605			
gag	tct	ccc	ctc	tgc	atc	cag	cac	gag	ggg	cat	gtc	tca	gac	aga	tgc	1872
Glu	Ser	Pro	Leu	Cys	Ile	Gln	His	Glu	Gly	His	Val	Ser	Asp	Arg	Cys	
			610					615				620				
tgc	gta	gag	act	tca	gca	ttg	gga	cac	gag	tgg	cgt	ctg	gaa	ccc	tct	1920
Cys	Val	Glu	Thr	Ser	Ala	Leu	Gly	His	Glu	Trp	Arg	Leu	Glu	Pro	Ser	

625	630	635	640	
gaa ggg cac agc caa gag ctt ccc tgg gtg cat ctc cag ggt gtg cag				1968
Glu Gly His Ser Gln Glu Leu Pro Trp Val His Leu Gln Gly Val Gln				
	645	650	655	
gac ggg gac ttg gag gcc gac aca gag cgg gca gcc aga gtc ttg ggt				2016
Asp Gly Asp Leu Glu Ala Asp Thr Glu Arg Ala Ala Arg Val Leu Gly				
	660	665	670	
ctg gaa act gag cac aag gtg caa ctt tcg ctt ctt cag act gag ctc				2064
Leu Glu Thr Glu His Lys Val Gln Leu Ser Leu Leu Gln Thr Glu Leu				
	675	680	685	
aaa gaa gaa att gaa ctc cta aaa ata gaa aat aga aat ttg tat gag				2112
Lys Glu Glu Ile Glu Leu Leu Lys Ile Glu Asn Arg Asn Leu Tyr Glu				
	690	695	700	
aag ttg cag cat gaa act cgt ctg aag gac gat ttg gag aag gta aaa				2160
Lys Leu Gln His Glu Thr Arg Leu Lys Asp Asp Leu Glu Lys Val Lys				
	705	710	715	720
cac aat cta att gaa gac cac cag aag gaa cta aat aat gct aag caa				2208
His Asn Leu Ile Glu Asp His Gln Lys Glu Leu Asn Asn Ala Lys Gln				
	725	730	735	
aag act gag ctg atg aaa cag gaa ttc caa aga aaa gaa acg gac tgg				2256
Lys Thr Glu Leu Met Lys Gln Glu Phe Gln Arg Lys Glu Thr Asp Trp				
	740	745	750	
aaa gtt atg aag gag gag cta cag cgg gaa gct gag gag aag tta aca				2304
Lys Val Met Lys Glu Glu Leu Gln Arg Glu Ala Glu Glu Lys Leu Thr				
	755	760	765	
ttg atg cta ctt gaa ctg aga gaa aag gct gaa tcc gag aaa cag acc				2352
Leu Met Leu Leu Glu Leu Arg Glu Lys Ala Glu Ser Glu Lys Gln Thr				
	770	775	780	
atc ata aac aag ttt gag ctt cga gaa gct gaa atg agg cag ctt cag				2400
Ile Ile Asn Lys Phe Glu Leu Arg Glu Ala Glu Met Arg Gln Leu Gln				
	785	790	795	800
gac caa cag gca gcc cag atc ctg gat ctg gag agg tcc ttg acg gag				2448
Asp Gln Gln Ala Ala Gln Ile Leu Asp Leu Glu Arg Ser Leu Thr Glu				
	805	810	815	
cag cag ggc cgc ctg cag cag ctg gaa cag gac ctc act tca gac gac				2496
Gln Gln Gly Arg Leu Gln Gln Leu Glu Gln Asp Leu Thr Ser Asp Asp				
	820	825	830	
gcc ctg cat tgc agc cag tgt ggg cgg gag ccg ccc aca gcc cag gac				2544
Ala Leu His Cys Ser Gln Cys Gly Arg Glu Pro Pro Thr Ala Gln Asp				
	835	840	845	
ggg gag ctt gcc gcg ctc cac gtg aag gaa gac tgc gcc ctg cag ctg				2592
Gly Glu Leu Ala Ala Leu His Val Lys Glu Asp Cys Ala Leu Gln Leu				
	850	855	860	

atg ctg gcc cgg agc agg ttt tta gag gaa cgt aaa gag atc acc gag	2640
Met Leu Ala Arg Ser Arg Phe Leu Glu Glu Arg Lys Glu Ile Thr Glu	
865 870 875 880	
aaa ttc agt gcg gaa caa gat gcc ttc ctg cag gag gcc cag gag cag	2688
Lys Phe Ser Ala Glu Gln Asp Ala Phe Leu Gln Glu Ala Gln Glu Gln	
885 890 895	
cat gcc cgt gag ctg cag ctc ctc cag gag aga cac cag cag cag ctc	2736
His Ala Arg Glu Leu Gln Leu Leu Gln Glu Arg His Gln Gln Gln Leu	
900 905 910	
ctg tca gtg acg gcg gag ctc gag gcc aga cac cag gcc gcg ttg ggc	2784
Leu Ser Val Thr Ala Glu Leu Glu Ala Arg His Gln Ala Ala Leu Gly	
915 920 925	
gag ctg aca gcc tcc tta gag agc aag cag ggg gct ctg ctg gct gca	2832
Glu Leu Thr Ala Ser Leu Glu Ser Lys Gln Gly Ala Leu Leu Ala Ala	
930 935 940	
cgt gtg gcc gaa ctg cag aca aaa cac gct gcc gac ctc ggc gct ctg	2880
Arg Val Ala Glu Leu Gln Thr Lys His Ala Ala Asp Leu Gly Ala Leu	
945 950 955 960	
gag acc aga cat ctg tcc agc ctt gat tct ttg gaa tcc tgt tac ctc	2928
Glu Thr Arg His Leu Ser Ser Leu Asp Ser Leu Glu Ser Cys Tyr Leu	
965 970 975	
tct gaa ttt cag acc atc cgt gag gag cac agg cag gcc cta gag ctc	2976
Ser Glu Phe Gln Thr Ile Arg Glu Glu His Arg Gln Ala Leu Glu Leu	
980 985 990	
tta cga gca gac ttt gag gaa caa ctg tgg aaa aag gac tct ctt cac	3024
Leu Arg Ala Asp Phe Glu Glu Gln Leu Trp Lys Lys Asp Ser Leu His	
995 1000 1005	
caa acg att ttg act caa gag ttg gag aaa ctg aag cgg aaa cac gaa	3072
Gln Thr Ile Leu Thr Gln Glu Leu Glu Lys Leu Lys Arg Lys His Glu	
1010 1015 1020	
ggg gag cta cag tct gtg cgg gac cac ctg cga acc gaa gtg agc aca	3120
Gly Glu Leu Gln Ser Val Arg Asp His Leu Arg Thr Glu Val Ser Thr	
1025 1030 1035 1040	
gag ctc gcc gga acc gtg gct cac gag ctg cag gga gtg cac cag ggt	3168
Glu Leu Ala Gly Thr Val Ala His Glu Leu Gln Gly Val His Gln Gly	
1045 1050 1055	
gaa ttt gga agt gaa aag aaa act gct ttg cat gaa aaa gag gag aca	3216
Glu Phe Gly Ser Glu Lys Lys Thr Ala Leu His Glu Lys Glu Glu Thr	
1060 1065 1070	
ctt cgg ctt cag agt gca cag gca cag cct ttt cac caa gag gag aaa	3264
Leu Arg Leu Gln Ser Ala Gln Ala Gln Pro Phe His Gln Glu Glu Lys	
1075 1080 1085	

gag tct ttg tct ctg cag ctt caa aag aag aat cac caa gtc cag cag Glu Ser Leu Ser Leu Gln Leu Gln Lys Lys Asn His Gln Val Gln Gln 1090 1095 1100	3312
ctg aaa gac cag gtt tta tcc tta agt cac gag ata gaa gag tgc cgc Leu Lys Asp Gln Val Leu Ser Leu Ser His Glu Ile Glu Glu Cys Arg 1105 1110 1115 1120	3360
tcc gag ttg gag gtg ctg cag cag agg cgg gag cgg gag aac cgg gaa Ser Glu Leu Glu Val Leu Gln Gln Arg Arg Glu Arg Glu Asn Arg Glu 1125 1130 1135	3408
ggc gca aac ctc ctc tcc atg ctc aag gcc gac gtc aac ctg tcc cac Gly Ala Asn Leu Leu Ser Met Leu Lys Ala Asp Val Asn Leu Ser His 1140 1145 1150	3456
agc gaa aga ggg gcc ctc cag gac gcc ctg cgc agg ctg ctg ggt ttg Ser Glu Arg Gly Ala Leu Gln Asp Ala Leu Arg Arg Leu Leu Gly Leu 1155 1160 1165	3504
ttt gga gag acg ctg agg gca gcc gtc acc ctg agg agc cgg atc ggg Phe Gly Glu Thr Leu Arg Ala Ala Val Thr Leu Arg Ser Arg Ile Gly 1170 1175 1180	3552
gag cgc gtg ggg ctc tgc ctg gat gac gcg ggc gca ggc ctg gcc ctg Glu Arg Val Gly Leu Cys Leu Asp Asp Ala Gly Ala Gly Leu Ala Leu 1185 1190 1195 1200	3600
tcg aca gct ccg gcg ctg gag gag aca tgg tct gat gtg gcc ctc ccg Ser Thr Ala Pro Ala Leu Glu Glu Thr Trp Ser Asp Val Ala Leu Pro 1205 1210 1215	3648
gag ttg gac aga act ttg tct gaa tgt gca gag atg tct tcc gtg gct Glu Leu Asp Arg Thr Leu Ser Glu Cys Ala Glu Met Ser Ser Val Ala 1220 1225 1230	3696
gaa att agc agc cac atg cgt gaa agc ttt ctc atg agc cca gaa agt Glu Ile Ser Ser His Met Arg Glu Ser Phe Leu Met Ser Pro Glu Ser 1235 1240 1245	3744
gtg cgg gag tgt gag cag ccc atc cgg agg gtc ttc cag agc ctc agc Val Arg Glu Cys Glu Gln Pro Ile Arg Arg Val Phe Gln Ser Leu Ser 1250 1255 1260	3792
ctg gcc gtg gac ggc ctc atg gag atg gcc ctg gac tcc agc agg cag Leu Ala Val Asp Gly Leu Met Glu Met Ala Leu Asp Ser Ser Arg Gln 1265 1270 1275 1280	3840
ctg gaa gaa gca cgc caa att cat tct cgt ttt gaa aaa gaa ttt agt Leu Glu Glu Ala Arg Gln Ile His Ser Arg Phe Glu Lys Glu Phe Ser 1285 1290 1295	3888
ttt aag aat gag gag aca gca cag gtt gtc agg aag cac cag gag ctg Phe Lys Asn Glu Glu Thr Ala Gln Val Val Arg Lys His Gln Glu Leu 1300 1305 1310	3936
ctg gag tgt ttg aag gag gag agc gca gca aag gca gag ctg gcg ctg	3984

Leu Glu Cys Leu Lys Glu Glu Ser Ala Ala Lys Ala Glu Leu Ala Leu	
1315 1320 1325	
gag ctg cac aag act cag ggt acc ctt gag gga ttc aag gtg gag aca	4032
Glu Leu His Lys Thr Gln Gly Thr Leu Glu Gly Phe Lys Val Glu Thr	
1330 1335 1340	
gca gat ctg aag gag gtg ctg gcc ggg aag gag gat tcc gag cac cgt	4080
Ala Asp Leu Lys Glu Val Leu Ala Gly Lys Glu Asp Ser Glu His Arg	
1345 1350 1355 1360	
ctg gtg ctg gag ctg gag agc ctg aga cgg cag ctg cag cag gcg gcc	4128
Leu Val Leu Glu Leu Glu Ser Leu Arg Arg Gln Leu Gln Gln Ala Ala	
1365 1370 1375	
cag gag cag gcg gcg ctg agg gag gag tgc acc cgt ctg tgg agt cgg	4176
Gln Glu Gln Ala Ala Leu Arg Glu Glu Cys Thr Arg Leu Trp Ser Arg	
1380 1385 1390	
ggg gag gcc aca gcc acg gac gcc gag gcc aga gaa gct gct ctc cgg	4224
Gly Glu Ala Thr Ala Thr Asp Ala Glu Ala Arg Glu Ala Ala Leu Arg	
1395 1400 1405	
aag gaa gtg gag gat ctg acc aaa gaa cag tcg gag acc agg aag cag	4272
Lys Glu Val Glu Asp Leu Thr Lys Glu Gln Ser Glu Thr Arg Lys Gln	
1410 1415 1420	
gct gag aag gac cgc tca gcc ctg ctc tcc cag atg aag att ttg gag	4320
Ala Glu Lys Asp Arg Ser Ala Leu Leu Ser Gln Met Lys Ile Leu Glu	
1425 1430 1435 1440	
tct gag tta gaa gaa cag ctg tct cag cat cgc ggg tgt gcc aag cag	4368
Ser Glu Leu Glu Glu Gln Leu Ser Gln His Arg Gly Cys Ala Lys Gln	
1445 1450 1455	
gcg gag gcc gtc act gcc ctg gaa cag cag gtg gca tct ctg gac aag	4416
Ala Glu Ala Val Thr Ala Leu Glu Gln Gln Val Ala Ser Leu Asp Lys	
1460 1465 1470	
cat ttg cgc aac cag cgg caa ttc atg gat gag cag gca gcc gag cgg	4464
His Leu Arg Asn Gln Arg Gln Phe Met Asp Glu Gln Ala Ala Glu Arg	
1475 1480 1485	
gag cac gag cgc gag gag ttc cag cag gag att cag agg ctg gag ggg	4512
Glu His Glu Arg Glu Glu Phe Gln Gln Glu Ile Gln Arg Leu Glu Gly	
1490 1495 1500	
cag ctc cgc cag gcg gcc aag ccg cag ccc tgg ggc cct cgc gac agc	4560
Gln Leu Arg Gln Ala Ala Lys Pro Gln Pro Trp Gly Pro Arg Asp Ser	
1505 1510 1515 1520	
cag cag gcg ccg ctg gat gga gag gtt gag ttg tta caa caa aag ttg	4608
Gln Gln Ala Pro Leu Asp Gly Glu Val Glu Leu Leu Gln Gln Lys Leu	
1525 1530 1535	
aga gaa aag ttg gat gaa ttt aat gaa ttg gct ata cag aaa gag tcg	4656
Arg Glu Lys Leu Asp Glu Phe Asn Glu Leu Ala Ile Gln Lys Glu Ser	

1540	1545	1550	
gca gat aga caa gtg tta atg cag gaa gaa gaa att aaa cgt ctg gag			4704
Ala Asp Arg Gln Val Leu Met Gln Glu Glu Glu Ile Lys Arg Leu Glu			
1555	1560	1565	
gag atg aac atc aac atc agg aaa aaa gtg gcc cag ctc cag gaa gaa			4752
Glu Met Asn Ile Asn Ile Arg Lys Lys Val Ala Gln Leu Gln Glu Glu			
1570	1575	1580	
gtg gaa aaa cag aaa aac atc gtg aaa ggg ctg gaa cag gat aaa gag			4800
Val Glu Lys Gln Lys Asn Ile Val Lys Gly Leu Glu Gln Asp Lys Glu			
1585	1590	1595	1600
gtg tta aag aaa cag cag atg agt agc ttg ctt ctg gcg tcc acg ttg			4848
Val Leu Lys Lys Gln Gln Met Ser Ser Leu Leu Leu Ala Ser Thr Leu			
1605	1610	1615	
cag tct aca cta gat gca ggc aga tgt ccc gag cct cct tcg ggc agc			4896
Gln Ser Thr Leu Asp Ala Gly Arg Cys Pro Glu Pro Pro Ser Gly Ser			
1620	1625	1630	
cct cct gag ggt cca gaa ata cag tta gag gtg aca cag aga gca ctc			4944
Pro Pro Glu Gly Pro Glu Ile Gln Leu Glu Val Thr Gln Arg Ala Leu			
1635	1640	1645	
ctg cgg cgc gag agc gag gtt ttg gac tta aaa gaa cag cta gaa aag			4992
Leu Arg Arg Glu Ser Glu Val Leu Asp Leu Lys Glu Gln Leu Glu Lys			
1650	1655	1660	
atg aaa ggt gac tta gaa agt aaa aat gaa gaa ata cta cat ctg aac			5040
Met Lys Gly Asp Leu Glu Ser Lys Asn Glu Glu Ile Leu His Leu Asn			
1665	1670	1675	1680
tta aaa ttg gac atg cag aac agc cag act gct gtc agc ctc aga gaa			5088
Leu Lys Leu Asp Met Gln Asn Ser Gln Thr Ala Val Ser Leu Arg Glu			
1685	1690	1695	
ctt gag gaa gag aac acg agc ttg aag gtc ata tat acc aga agt tct			5136
Leu Glu Glu Glu Asn Thr Ser Leu Lys Val Ile Tyr Thr Arg Ser Ser			
1700	1705	1710	
gag att gaa gag ctg aaa gcc act att gaa aat ctg caa gag aat cag			5184
Glu Ile Glu Glu Leu Lys Ala Thr Ile Glu Asn Leu Gln Glu Asn Gln			
1715	1720	1725	
aaa cga tta caa aag gag aaa gca gag gaa att gaa caa ctc cat gaa			5232
Lys Arg Leu Gln Lys Glu Lys Ala Glu Glu Ile Glu Gln Leu His Glu			
1730	1735	1740	
gtc att gag aag ctg cag cac gag ctg tcc ctc atg ggg cct gtg gtg			5280
Val Ile Glu Lys Leu Gln His Glu Leu Ser Leu Met Gly Pro Val Val			
1745	1750	1755	1760
cac gaa gtc agc gac agt cag gct ggc agt ctg cag agc gag ctg ctc			5328
His Glu Val Ser Asp Ser Gln Ala Gly Ser Leu Gln Ser Glu Leu Leu			
1765	1770	1775	

tgc tcc cag gcc ggg ggc cct cgt ggg cag gcc cta cag ggc gag ctc Cys Ser Gln Ala Gly Gly Pro Arg Gly Gln Ala Leu Gln Gly Glu Leu 1780 1785 1790	5376
gag gct gcg ctg gaa gcc aag gag gcc ctg agc cgg ctg ctg gct gac Glu Ala Ala Leu Glu Ala Lys Glu Ala Leu Ser Arg Leu Leu Ala Asp 1795 1800 1805	5424
cag gag cgc agg cac agc cag gcc ctg gag gcc ctg cag cag cgc ctc Gln Glu Arg Arg His Ser Gln Ala Leu Glu Ala Leu Gln Gln Arg Leu 1810 1815 1820	5472
cag ggc gca gag gag gct gcg gag cta cag ctg gct gag ctg gag cgc Gln Gly Ala Glu Glu Ala Ala Glu Leu Gln Leu Ala Glu Leu Glu Arg 1825 1830 1835 1840	5520
aat gta gcc ctc agg gag gct gag gtc gaa gac atg gcc tcc cgg atc Asn Val Ala Leu Arg Glu Ala Glu Val Glu Asp Met Ala Ser Arg Ile 1845 1850 1855	5568
cag gag ttc gaa gcg gcc ctg aaa gca aag gaa gcg acg att gcc gag Gln Glu Phe Glu Ala Ala Leu Lys Ala Lys Glu Ala Thr Ile Ala Glu 1860 1865 1870	5616
aga aat tta gaa atc gac gct ctg aac cag cgg aag gcg gcc cac tct Arg Asn Leu Glu Ile Asp Ala Leu Asn Gln Arg Lys Ala Ala His Ser 1875 1880 1885	5664
gcc gag ctg gag gcc gtc ctg ttg gcc ttg gcc cgc atc cgc cgc gcc Ala Glu Leu Glu Ala Val Leu Leu Ala Leu Ala Arg Ile Arg Arg Ala 1890 1895 1900	5712
ctg gag cag cag ccc ctg gca gcc ggg gcg gcg cct ccc gag ctg cag Leu Glu Gln Gln Pro Leu Ala Ala Gly Ala Ala Pro Pro Glu Leu Gln 1905 1910 1915 1920	5760
tgg ctc cga gcg cag tgt gcc cgc ctc agc cgc cag ctg cag gtg ctg Trp Leu Arg Ala Gln Cys Ala Arg Leu Ser Arg Gln Leu Gln Val Leu 1925 1930 1935	5808
cac cag cgg ttc ctg agg tgc cag gtg gag ctg gac agg cgg cag gcc His Gln Arg Phe Leu Arg Cys Gln Val Glu Leu Asp Arg Arg Gln Ala 1940 1945 1950	5856
cgc aga gcc aca gct cac aca cgg gtg ccc ggg gcc cac cca cag cct Arg Arg Ala Thr Ala His Thr Arg Val Pro Gly Ala His Pro Gln Pro 1955 1960 1965	5904
cgc atg gat ggt ggc gcc aag gcc cag gtc acc ggc gac gtg gag gcc Arg Met Asp Gly Gly Ala Lys Ala Gln Val Thr Gly Asp Val Glu Ala 1970 1975 1980	5952
tcc cat gat gct gct ttg gag ccg gtt gtc cct gac cca cag ggt gat Ser His Asp Ala Ala Leu Glu Pro Val Val Pro Asp Pro Gln Gly Asp 1985 1990 1995 2000	6000

ctg cag cct gtc ctg gtg acg ttg aag gat gca cct ctc tgc aag caa Leu Gln Pro Val Leu Val Thr Leu Lys Asp Ala Pro Leu Cys Lys Gln 2005 2010 2015	6048
gaa ggc gtg atg tca gtg ctc acc gtc tgc cag agg cag ctg cag tcg Glu Gly Val Met Ser Val Leu Thr Val Cys Gln Arg Gln Leu Gln Ser 2020 2025 2030	6096
gag ctg ctc ttg gtg aaa aat gaa atg cgc ctg agt ctg gag gac ggc Glu Leu Leu Leu Val Lys Asn Glu Met Arg Leu Ser Leu Glu Asp Gly 2035 2040 2045	6144
ggc aag ggt aaa gaa aaa gta ctg gaa gat tgt cag ctg ccg aag gtc Gly Lys Gly Lys Glu Lys Val Leu Glu Asp Cys Gln Leu Pro Lys Val 2050 2055 2060	6192
gat ctc gta gct cag gtg aaa cag ctt cag gaa aaa ctg aac cgt ttg Asp Leu Val Ala Gln Val Lys Gln Leu Gln Glu Lys Leu Asn Arg Leu 2065 2070 2075 2080	6240
ctg tat tcc atg acc ttc cag aat gtg gat gct gcc gac acc aaa tct Leu Tyr Ser Met Thr Phe Gln Asn Val Asp Ala Ala Asp Thr Lys Ser 2085 2090 2095	6288
ctg tgg ccc atg gcc tca gca cac ctg ttg gag agc agc tgg agt gat Leu Trp Pro Met Ala Ser Ala His Leu Leu Glu Ser Ser Trp Ser Asp 2100 2105 2110	6336
gat tcc tgt gac gga gaa gag cct gac ata tca ccc cac ata gac aca Asp Ser Cys Asp Gly Glu Glu Pro Asp Ile Ser Pro His Ile Asp Thr 2115 2120 2125	6384
tgt gat gcc aat aca gcc acg ggg ggt gta act gat gtt atc aaa aat Cys Asp Ala Asn Thr Ala Thr Gly Gly Val Thr Asp Val Ile Lys Asn 2130 2135 2140	6432
cag gcc ata gac gcg tgt gat gcc aat aca acc cca ggg ggt gta act Gln Ala Ile Asp Ala Cys Asp Ala Asn Thr Thr Pro Gly Gly Val Thr 2145 2150 2155 2160	6480
gat gtt atc aaa aat tgg gat tcc ttg ata cca gat gaa atg cca gat Asp Val Ile Lys Asn Trp Asp Ser Leu Ile Pro Asp Glu Met Pro Asp 2165 2170 2175	6528
tct ccc att caa gaa aaa tca gaa tgt cag gac atg tct ctt tct tca Ser Pro Ile Gln Glu Lys Ser Glu Cys Gln Asp Met Ser Leu Ser Ser 2180 2185 2190	6576
ccg acc agc gta ctt ggt ggc tcc cgc cac cag agc cac act gca gag Pro Thr Ser Val Leu Gly Gly Ser Arg His Gln Ser His Thr Ala Glu 2195 2200 2205	6624
gct ggg ccc cgg aag agc ccg gtc ggg atg ctg gac ctg tct tcc tgg Ala Gly Pro Arg Lys Ser Pro Val Gly Met Leu Asp Leu Ser Ser Trp 2210 2215 2220	6672
agc tcc cct gag gtc ctc agg aag gac tgg acc ctg gag ccc tgg ccc	6720

2450	2455	2460	
cag gag atg cag ggg gtt gag ctg cag ccc cga ctc agt ggc tca gat			7440
Gln Glu Met Gln Gly Val Glu Leu Gln Pro Arg Leu Ser Gly Ser Asp			
2465	2470	2475	2480
ctg ggg ggt cac agc tcc ctg ctc gaa agg ctg gag aag atc atc cgt			7488
Leu Gly Gly His Ser Ser Leu Leu Glu Arg Leu Glu Lys Ile Ile Arg			
	2485	2490	2495
gag cag gga gac ctg cag gaa aag tcc ctg gag cat ctt cgc ttg ccg			7536
Glu Gln Gly Asp Leu Gln Glu Lys Ser Leu Glu His Leu Arg Leu Pro			
	2500	2505	2510
gac cgg agc agc ctg ctg tcc gag atc cag gcg ctg cgt gcc cag ctg			7584
Asp Arg Ser Ser Leu Leu Ser Glu Ile Gln Ala Leu Arg Ala Gln Leu			
	2515	2520	2525
cgc atg acg cac ctg cag aac cag gag aag ctg cag cac ttg cgc acg			7632
Arg Met Thr His Leu Gln Asn Gln Glu Lys Leu Gln His Leu Arg Thr			
	2530	2535	2540
gcg ctg aca agc gca gag gcg cgc ggg agc cag cag gag cac cag ctg			7680
Ala Leu Thr Ser Ala Glu Ala Arg Gly Ser Gln Gln Glu His Gln Leu			
2545	2550	2555	2560
cgc agg cag gtt gaa ctg ctg gct tat aaa gta gag cag gag aag tgc			7728
Arg Arg Gln Val Glu Leu Ala Tyr Lys Val Glu Gln Glu Lys Cys			
	2565	2570	2575
att gct ggt gac ttg cag aag acg ctg agt gaa gag caa gag aag gca			7776
Ile Ala Gly Asp Leu Gln Lys Thr Leu Ser Glu Glu Gln Glu Lys Ala			
	2580	2585	2590
aac agc gtg cag aag ctc ctg gcg gcg gag cag act gta gtg cga gat			7824
Asn Ser Val Gln Lys Leu Leu Ala Ala Glu Gln Thr Val Val Arg Asp			
	2595	2600	2605
ttg aag tcc gac ctc tgt gag agc agg cag aag agc gaa cag ctg tcc			7872
Leu Lys Ser Asp Leu Cys Glu Ser Arg Gln Lys Ser Glu Gln Leu Ser			
	2610	2615	2620
cgg tcc ctc tgc gag gtg cag cag gag gtc ctc cag ctg aga tcc atg			7920
Arg Ser Leu Cys Glu Val Gln Gln Glu Val Leu Gln Leu Arg Ser Met			
2625	2630	2635	2640
ctg agc agt aag gag aac gag ctg aag gcc gcg ctt cag gag ctg gag			7968
Leu Ser Ser Lys Glu Asn Glu Leu Lys Ala Ala Leu Gln Glu Leu Glu			
	2645	2650	2655
agt gag cag ggg aag ggg cgt gcc ctg cag agc cag ctg gag gag gag			8016
Ser Glu Gln Gly Lys Gly Arg Ala Leu Gln Ser Gln Leu Glu Glu Glu			
	2660	2665	2670
cag ctg cgg cac ctg cag agg gag agc cag agt gcc aag gcc ctg gag			8064
Gln Leu Arg His Leu Gln Arg Glu Ser Gln Ser Ala Lys Ala Leu Glu			
	2675	2680	2685

gag ctg cgg gcg tct ttg gag aca cag cgt gct cag agc agt cga ctc Glu Leu Arg Ala Ser Leu Glu Thr Gln Arg Ala Gln Ser Ser Arg Leu 2690 2695 2700	8112
tgc gtg gca ctg aaa cac gag cag acg gcc aag gac aac ctg cag aag Cys Val Ala Leu Lys His Glu Gln Thr Ala Lys Asp Asn Leu Gln Lys 2705 2710 2715 2720	8160
gag ctg cgt atc gag cac tca cgc tgc gag gcc ttg ctg gct cag gag Glu Leu Arg Ile Glu His Ser Arg Cys Glu Ala Leu Leu Ala Gln Glu 2725 2730 2735	8208
cgg agc cag ctc tct gag ctc cag aag gac ctt gcg gct gag aag agc Arg Ser Gln Leu Ser Glu Leu Gln Lys Asp Leu Ala Ala Glu Lys Ser 2740 2745 2750	8256
cgc acc ctg gag ctg tca gag gcc ttg cgg cac gag cgg ctc ctg acc Arg Thr Leu Glu Leu Ser Glu Ala Leu Arg His Glu Arg Leu Leu Thr 2755 2760 2765	8304
gag cag ctg agc cag agg aca cag gag gct tgc gtg cac cag gac aca Glu Gln Leu Ser Gln Arg Thr Gln Glu Ala Cys Val His Gln Asp Thr 2770 2775 2780	8352
cag gcc cat cac gct ctg ctg cag aag ctg aag gag gag aag tcc cgg Gln Ala His His Ala Leu Leu Gln Lys Leu Lys Glu Glu Lys Ser Arg 2785 2790 2795 2800	8400
gtg gtg gac ttg caa gcg atg ctt gaa aag gtg cag cag caa gcc ctg Val Val Asp Leu Gln Ala Met Leu Glu Lys Val Gln Gln Gln Ala Leu 2805 2810 2815	8448
cat tct cag cag cag ctt gag gct gag gct cag aag cac tgt gag gcg His Ser Gln Gln Gln Leu Glu Ala Glu Ala Gln Lys His Cys Glu Ala 2820 2825 2830	8496
ctc agg aga gag aag gag gta agt gcc aca ctg aag tcg acg gtg gaa Leu Arg Arg Glu Lys Glu Val Ser Ala Thr Leu Lys Ser Thr Val Glu 2835 2840 2845	8544
gcc ctg cac acc caa aaa cga gag ctg aga tgc tct ctg gag aga gag Ala Leu His Thr Gln Lys Arg Glu Leu Arg Cys Ser Leu Glu Arg Glu 2850 2855 2860	8592
agg gag aaa cca gcg tgg ttg cag gca gaa tta gag cag tca cac cca Arg Glu Lys Pro Ala Trp Leu Gln Ala Glu Leu Glu Gln Ser His Pro 2865 2870 2875 2880	8640
cgg ttg aaa gag caa gaa gga cgc aag gct gcg agg agg agc gcg gag Arg Leu Lys Glu Gln Glu Gly Arg Lys Ala Ala Arg Arg Ser Ala Glu 2885 2890 2895	8688
gcc agg cag agc cca gcg gct gcg gag cag tgg agg aag tgg cag aga Ala Arg Gln Ser Pro Ala Ala Ala Glu Gln Trp Arg Lys Trp Gln Arg 2900 2905 2910	8736

gac aag gag aag ctg cga gaa tta gaa ctg cag cgt cag cgt gac ttg Asp Lys Glu Lys Leu Arg Glu Leu Glu Leu Gln Arg Gln Arg Asp Leu 2915 2920 2925	8784
cat aag atc aag cag ctt cag cag aca gtg aga gac ctg gag tcg aag His Lys Ile Lys Gln Leu Gln Gln Thr Val Arg Asp Leu Glu Ser Lys 2930 2935 2940	8832
gac gag gtg cct ggc agc cgc ctc cac cta ggt tct gcc cgc agg gct Asp Glu Val Pro Gly Ser Arg Leu His Leu Gly Ser Ala Arg Arg Ala 2945 2950 2955 2960	8880
gcc ggc tcg gat gcg gac cac ctc cgg gaa cag cag cga gag ctg gag Ala Gly Ser Asp Ala Asp His Leu Arg Glu Gln Gln Arg Glu Leu Glu 2965 2970 2975	8928
gcg atg agg cag cgg ctg ctc tct gcc gcc cgg ctt ctc acc agc ttc Ala Met Arg Gln Arg Leu Leu Ser Ala Ala Arg Leu Leu Thr Ser Phe 2980 2985 2990	8976
acc agc cag gcc gtg gac agg aca gtt aat gat tgg acg tca tcc aat Thr Ser Gln Ala Val Asp Arg Thr Val Asn Asp Trp Thr Ser Ser Asn 2995 3000 3005	9024
gag aaa gca gtg atg tct tta ctg cac acg ttg gag gag ctg aag tct Glu Lys Ala Val Met Ser Leu Leu His Thr Leu Glu Glu Leu Lys Ser 3010 3015 3020	9072
gac ttg agc agg ccc acc tcc tcc cag aaa aaa atg gca gca gag ctg Asp Leu Ser Arg Pro Thr Ser Ser Gln Lys Lys Met Ala Ala Glu Leu 3025 3030 3035 3040	9120
cag ttc cag ttt gtg gac gtc ctg ctg aaa gac aat gtt tcc ctc aca Gln Phe Gln Phe Val Asp Val Leu Leu Lys Asp Asn Val Ser Leu Thr 3045 3050 3055	9168
aaa gcg ctc agc acg gtg acc cag gag aag ctg gag ctg agc aga gcc Lys Ala Leu Ser Thr Val Thr Gln Glu Lys Leu Glu Leu Ser Arg Ala 3060 3065 3070	9216
gtg tct aag ctt gag aag ttg ctg aag cac cat ctg cag aag ggc tgc Val Ser Lys Leu Glu Lys Leu Leu Lys His His Leu Gln Lys Gly Cys 3075 3080 3085	9264
agc cca agc agg tcg gaa agg tct gct tgg aag cca gac gaa acg gct Ser Pro Ser Arg Ser Glu Arg Ser Ala Trp Lys Pro Asp Glu Thr Ala 3090 3095 3100	9312
cca cag agt tcc ctg agg cgc cca gac ccc ggc cgg ctt cca cca gct Pro Gln Ser Ser Leu Arg Arg Pro Asp Pro Gly Arg Leu Pro Pro Ala 3105 3110 3115 3120	9360
gcc agc gag gaa gca cac acc agc aat gtc aag atg gaa aaa ttg tac Ala Ser Glu Glu Ala His Thr Ser Asn Val Lys Met Glu Lys Leu Tyr 3125 3130 3135	9408
ctg cat tac ttg aga gca gag agc ttt aga aaa gct ctg att tat caa	9456

Leu His Tyr	Leu Arg Ala Glu Ser Phe Arg Lys Ala Leu Ile Tyr Gln	
3140	3145	3150
aag aag tat ctt ttg ctg ttg att ggt gga ttc cag gat tct gaa caa	9504	
Lys Lys Tyr Leu Leu Leu Leu Ile Gly Gly Phe Gln Asp Ser Glu Gln		
3155	3160	3165
gaa aca ctc tcc atg att gcc cat ttg ggg gta ttt cct tcc aaa gca	9552	
Glu Thr Leu Ser Met Ile Ala His Leu Gly Val Phe Pro Ser Lys Ala		
3170	3175	3180
gaa cgg aaa atc aca tct cgt cct ttc acc agg ttc cgc acg gcc gtc	9600	
Glu Arg Lys Ile Thr Ser Arg Pro Phe Thr Arg Phe Arg Thr Ala Val		
3185	3190	3195 3200
agg gtg gtc att gca ata tta aga tta cgt ttt ttg gtt aag aaa tgg	9648	
Arg Val Val Ile Ala Ile Leu Arg Leu Arg Phe Leu Val Lys Lys Trp		
3205	3210	3215
caa gaa gta gat cgg aaa gga gct ctg gca caa ggc aaa gcc cct cgc	9696	
Gln Glu Val Asp Arg Lys Gly Ala Leu Ala Gln Gly Lys Ala Pro Arg		
3220	3225	3230
cca ggg ccc cga gca cga cag ccg cag tct cca ccc aga acc aga gag	9744	
Pro Gly Pro Arg Ala Arg Gln Pro Gln Ser Pro Pro Arg Thr Arg Glu		
3235	3240	3245
tcc ccc cca acc cgg gat gta ccc tct ggc cac acc agg gac cct gcc	9792	
Ser Pro Pro Thr Arg Asp Val Pro Ser Gly His Thr Arg Asp Pro Ala		
3250	3255	3260
aga ggc cgc aga ctg gca gca gca gcc tcc cca cac agt ggg gga aga	9840	
Arg Gly Arg Arg Leu Ala Ala Ala Ala Ser Pro His Ser Gly Gly Arg		
3265	3270	3275 3280
gcc act cca tcc cca aat tca aga tta gaa aga tcc ctg act gct tct	9888	
Ala Thr Pro Ser Pro Asn Ser Arg Leu Glu Arg Ser Leu Thr Ala Ser		
3285	3290	3295
caa gat cca gaa cat tcc ttg aca gag tat att cac cat tta gaa gtg	9936	
Gln Asp Pro Glu His Ser Leu Thr Glu Tyr Ile His His Leu Glu Val		
3300	3305	3310
atc cag caa aga ttg gga ggg gta cta cca gat tct act tca aag aaa	9984	
Ile Gln Gln Arg Leu Gly Gly Val Leu Pro Asp Ser Thr Ser Lys Lys		
3315	3320	3325
tcc tgc cac ccg atg att aaa cag tga	10011	
Ser Cys His Pro Met Ile Lys Gln		
3330	3335	
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<211> 3336		
<212> PRT		
<213> Homo sapiens		

<400> 4

Met	Glu	Val	Glu	Gln	Glu	Gln	Arg	Arg	Arg	Lys	Val	Glu	Ala	Gly	Arg	1	5	10	15
Thr	Lys	Leu	Ala	His	Phe	Arg	Gln	Arg	Lys	Thr	Lys	Gly	Asp	Ser	Ser	20	25	30	
His	Ser	Glu	Lys	Lys	Thr	Ala	Lys	Arg	Lys	Gly	Ser	Ala	Val	Asp	Ala	35	40	45	
Ser	Val	Gln	Glu	Glu	Ser	Pro	Val	Thr	Lys	Glu	Asp	Ser	Ala	Leu	Cys	50	55	60	
Gly	Gly	Gly	Asp	Ile	Cys	Lys	Ser	Thr	Ser	Cys	Asp	Asp	Thr	Pro	Asp	65	70	75	
Gly	Ala	Gly	Gly	Ala	Phe	Ala	Ala	Gln	Pro	Glu	Asp	Cys	Asp	Gly	Glu	85	90	95	
Lys	Arg	Glu	Asp	Leu	Glu	Gln	Leu	Gln	Gln	Lys	Gln	Val	Asn	Asp	His	100	105	110	
Pro	Pro	Glu	Gln	Cys	Gly	Met	Phe	Thr	Val	Ser	Asp	His	Pro	Pro	Glu	115	120	125	
Gln	His	Gly	Met	Phe	Thr	Val	Gly	Asp	His	Pro	Pro	Glu	Gln	Arg	Gly	130	135	140	
Met	Phe	Thr	Val	Ser	Asp	His	Pro	Pro	Glu	Gln	His	Gly	Met	Phe	Thr	145	150	155	
Val	Ser	Asp	His	Pro	Pro	Glu	Gln	Arg	Gly	Met	Phe	Thr	Ile	Ser	Asp	165	170	175	
His	Gln	Pro	Glu	Gln	Arg	Gly	Met	Phe	Thr	Val	Ser	Asp	His	Thr	Pro	180	185	190	
Glu	Gln	Arg	Gly	Ile	Phe	Thr	Ile	Ser	Asp	His	Pro	Ala	Glu	Gln	Arg	195	200	205	
Gly	Met	Phe	Thr	Lys	Glu	Cys	Glu	Gln	Glu	Cys	Glu	Leu	Ala	Ile	Thr	210	215	220	
Asp	Leu	Glu	Ser	Gly	Arg	Glu	Asp	Glu	Ala	Gly	Leu	His	Gln	Ser	Gln	225	230	235	
Ala	Val	His	Gly	Leu	Glu	Leu	Glu	Ala	Leu	Arg	Leu	Ser	Leu	Ser	Asn	245	250	255	
Met	His	Thr	Ala	Gln	Leu	Glu	Leu	Thr	Gln	Ala	Asn	Leu	Gln	Lys	Glu	260	265	270	
Lys	Glu	Thr	Ala	Leu	Thr	Glu	Leu	Arg	Glu	Met	Leu	Asn	Ser	Arg	Arg	275	280	285	
Ala	Gln	Glu	Leu	Ala	Leu	Leu	Gln	Ser	Arg	Gln	Gln	His	Glu	Leu	Glu	290	295	300	
Leu	Leu	Arg	Glu	Gln	His	Ala	Arg	Glu	Lys	Glu	Glu	Val	Val	Leu	Arg	305	310	315	
Cys	Gly	Gln	Glu	Ala	Ala	Glu	Leu	Lys	Glu	Lys	Leu	Gln	Ser	Glu	Met	325	330	335	
Glu	Lys	Asn	Ala	Gln	Ile	Val	Lys	Thr	Leu	Lys	Glu	Asp	Trp	Glu	Ser	340	345	350	
Glu	Lys	Asp	Leu	Cys	Leu	Glu	Asn	Leu	Arg	Lys	Glu	Leu	Ser	Ala	Lys	355	360	365	
His	Gln	Ser	Glu	Met	Glu	Asp	Leu	Gln	Asn	Gln	Phe	Gln	Lys	Glu	Leu	370	375	380	
Ala	Glu	Gln	Arg	Ala	Glu	Leu	Glu	Lys	Ile	Phe	Gln	Asp	Lys	Asn	Gln	385	390	395	
Ala	Glu	Arg	Ala	Leu	Arg	Asn	Leu	Glu	Ser	His	His	Gln	Ala	Ala	Ile	405	410	415	
Glu	Lys	Leu	Arg	Glu	Asp	Leu	Gln	Ser	Glu	His	Gly	Arg	Cys	Leu	Glu	420	425	430	
Asp	Leu	Glu	Phe	Lys	Phe	Lys	Glu	Ser	Glu	Lys	Glu	Lys	Gln	Leu	Glu	435	440	445	

Leu	Glu	Asn	Leu	Gln	Ala	Ser	Tyr	Glu	Asp	Leu	Lys	Ala	Gln	Ser	Gln	450	455	460
Glu	Glu	Ile	Arg	Arg	Leu	Trp	Ser	Gln	Leu	Asp	Ser	Ala	Arg	Thr	Ser	465	470	475
Arg	Gln	Glu	Leu	Ser	Glu	Leu	His	Glu	Gln	Leu	Leu	Ala	Arg	Thr	Ser	485	490	495
Arg	Val	Glu	Asp	Leu	Glu	Gln	Leu	Lys	Gln	Arg	Glu	Lys	Thr	Gln	His	500	505	510
Glu	Ser	Glu	Leu	Glu	Gln	Leu	Arg	Ile	Tyr	Phe	Glu	Lys	Lys	Leu	Arg	515	520	525
Asp	Ala	Glu	Lys	Thr	Tyr	Gln	Glu	Asp	Leu	Thr	Leu	Leu	Gln	Gln	Arg	530	535	540
Leu	Gln	Gly	Ala	Arg	Glu	Asp	Ala	Leu	Leu	Asp	Ser	Val	Glu	Val	Gly	545	550	555
Leu	Ser	Cys	Val	Gly	Leu	Glu	Glu	Lys	Pro	Glu	Lys	Gly	Arg	Lys	Asp	565	570	575
His	Val	Asp	Glu	Leu	Glu	Pro	Glu	Arg	His	Lys	Glu	Ser	Leu	Pro	Arg	580	585	590
Phe	Gln	Ala	Glu	Leu	Glu	Glu	Ser	His	Arg	His	Gln	Leu	Glu	Ala	Leu	595	600	605
Glu	Ser	Pro	Leu	Cys	Ile	Gln	His	Glu	Gly	His	Val	Ser	Asp	Arg	Cys	610	615	620
Cys	Val	Glu	Thr	Ser	Ala	Leu	Gly	His	Glu	Trp	Arg	Leu	Glu	Pro	Ser	625	630	635
Glu	Gly	His	Ser	Gln	Glu	Leu	Pro	Trp	Val	His	Leu	Gln	Gly	Val	Gln	645	650	655
Asp	Gly	Asp	Leu	Glu	Ala	Asp	Thr	Glu	Arg	Ala	Ala	Arg	Val	Leu	Gly	660	665	670
Leu	Glu	Thr	Glu	His	Lys	Val	Gln	Leu	Ser	Leu	Leu	Gln	Thr	Glu	Leu	675	680	685
Lys	Glu	Glu	Ile	Glu	Leu	Leu	Lys	Ile	Glu	Asn	Arg	Asn	Leu	Tyr	Glu	690	695	700
Lys	Leu	Gln	His	Glu	Thr	Arg	Leu	Lys	Asp	Asp	Leu	Glu	Lys	Val	Lys	705	710	715
His	Asn	Leu	Ile	Glu	Asp	His	Gln	Lys	Glu	Leu	Asn	Asn	Ala	Lys	Gln	725	730	735
Lys	Thr	Glu	Leu	Met	Lys	Gln	Glu	Phe	Gln	Arg	Lys	Glu	Thr	Asp	Trp	740	745	750
Lys	Val	Met	Lys	Glu	Glu	Leu	Gln	Arg	Glu	Ala	Glu	Glu	Lys	Leu	Thr	755	760	765
Leu	Met	Leu	Leu	Glu	Leu	Arg	Glu	Lys	Ala	Glu	Ser	Glu	Lys	Gln	Thr	770	775	780
Ile	Ile	Asn	Lys	Phe	Glu	Leu	Arg	Glu	Ala	Glu	Met	Arg	Gln	Leu	Gln	785	790	795
Asp	Gln	Gln	Ala	Ala	Gln	Ile	Leu	Asp	Leu	Glu	Arg	Ser	Leu	Thr	Glu	805	810	815
Gln	Gln	Gly	Arg	Leu	Gln	Gln	Leu	Glu	Gln	Asp	Leu	Thr	Ser	Asp	Asp	820	825	830
Ala	Leu	His	Cys	Ser	Gln	Cys	Gly	Arg	Glu	Pro	Pro	Thr	Ala	Gln	Asp	835	840	845
Gly	Glu	Leu	Ala	Ala	Leu	His	Val	Lys	Glu	Asp	Cys	Ala	Leu	Gln	Leu	850	855	860
Met	Leu	Ala	Arg	Ser	Arg	Phe	Leu	Glu	Glu	Arg	Lys	Glu	Ile	Thr	Glu	865	870	875
Lys	Phe	Ser	Ala	Glu	Gln	Asp	Ala	Phe	Leu	Gln	Glu	Ala	Gln	Glu	Gln	885	890	895
His	Ala	Arg	Glu	Leu	Gln	Leu	Leu	Gln	Glu	Arg	His	Gln	Gln	Gln	Leu			

	900		905		910
Leu Ser Val Thr Ala Glu Leu Glu Ala Arg His Gln Ala Ala Leu Gly					
915		920		925	
Glu Leu Thr Ala Ser Leu Glu Ser Lys Gln Gly Ala Leu Leu Ala Ala					
930		935		940	
Arg Val Ala Glu Leu Gln Thr Lys His Ala Ala Asp Leu Gly Ala Leu					
945		950		955	960
Glu Thr Arg His Leu Ser Ser Leu Asp Ser Leu Glu Ser Cys Tyr Leu					
	965		970		975
Ser Glu Phe Gln Thr Ile Arg Glu Glu His Arg Gln Ala Leu Glu Leu					
	980		985		990
Leu Arg Ala Asp Phe Glu Glu Gln Leu Trp Lys Lys Asp Ser Leu His					
	995		1000		1005
Gln Thr Ile Leu Thr Gln Glu Leu Glu Lys Leu Lys Arg Lys His Glu					
	1010		1015		1020
Gly Glu Leu Gln Ser Val Arg Asp His Leu Arg Thr Glu Val Ser Thr					
1025		1030		1035	1040
Glu Leu Ala Gly Thr Val Ala His Glu Leu Gln Gly Val His Gln Gly					
	1045		1050		1055
Glu Phe Gly Ser Glu Lys Lys Thr Ala Leu His Glu Lys Glu Glu Thr					
	1060		1065		1070
Leu Arg Leu Gln Ser Ala Gln Ala Gln Pro Phe His Gln Glu Glu Lys					
	1075		1080		1085
Glu Ser Leu Ser Leu Gln Leu Gln Lys Lys Asn His Gln Val Gln Gln					
	1090		1095		1100
Leu Lys Asp Gln Val Leu Ser Leu Ser His Glu Ile Glu Glu Cys Arg					
1105		1110		1115	1120
Ser Glu Leu Glu Val Leu Gln Gln Arg Arg Glu Arg Glu Asn Arg Glu					
	1125		1130		1135
Gly Ala Asn Leu Leu Ser Met Leu Lys Ala Asp Val Asn Leu Ser His					
	1140		1145		1150
Ser Glu Arg Gly Ala Leu Gln Asp Ala Leu Arg Arg Leu Leu Gly Leu					
	1155		1160		1165
Phe Gly Glu Thr Leu Arg Ala Ala Val Thr Leu Arg Ser Arg Ile Gly					
	1170		1175		1180
Glu Arg Val Gly Leu Cys Leu Asp Asp Ala Gly Ala Gly Leu Ala Leu					
1185		1190		1195	1200
Ser Thr Ala Pro Ala Leu Glu Glu Thr Trp Ser Asp Val Ala Leu Pro					
	1205		1210		1215
Glu Leu Asp Arg Thr Leu Ser Glu Cys Ala Glu Met Ser Ser Val Ala					
	1220		1225		1230
Glu Ile Ser Ser His Met Arg Glu Ser Phe Leu Met Ser Pro Glu Ser					
	1235		1240		1245
Val Arg Glu Cys Glu Gln Pro Ile Arg Arg Val Phe Gln Ser Leu Ser					
	1250		1255		1260
Leu Ala Val Asp Gly Leu Met Glu Met Ala Leu Asp Ser Ser Arg Gln					
1265		1270		1275	1280
Leu Glu Glu Ala Arg Gln Ile His Ser Arg Phe Glu Lys Glu Phe Ser					
	1285		1290		1295
Phe Lys Asn Glu Glu Thr Ala Gln Val Val Arg Lys His Gln Glu Leu					
	1300		1305		1310
Leu Glu Cys Leu Lys Glu Glu Ser Ala Ala Lys Ala Glu Leu Ala Leu					
	1315		1320		1325
Glu Leu His Lys Thr Gln Gly Thr Leu Glu Gly Phe Lys Val Glu Thr					
	1330		1335		1340
Ala Asp Leu Lys Glu Val Leu Ala Gly Lys Glu Asp Ser Glu His Arg					
1345		1350		1355	1360

Leu Val Leu Glu Leu Glu Ser Leu Arg Arg Gln Leu Gln Gln Ala Ala
 1365 1370 1375
 Gln Glu Gln Ala Ala Leu Arg Glu Glu Cys Thr Arg Leu Trp Ser Arg
 1380 1385 1390
 Gly Glu Ala Thr Ala Thr Asp Ala Glu Ala Arg Glu Ala Ala Leu Arg
 1395 1400 1405
 Lys Glu Val Glu Asp Leu Thr Lys Glu Gln Ser Glu Thr Arg Lys Gln
 1410 1415 1420
 Ala Glu Lys Asp Arg Ser Ala Leu Leu Ser Gln Met Lys Ile Leu Glu
 1425 1430 1435 1440
 Ser Glu Leu Glu Glu Gln Leu Ser Gln His Arg Gly Cys Ala Lys Gln
 1445 1450 1455
 Ala Glu Ala Val Thr Ala Leu Glu Gln Gln Val Ala Ser Leu Asp Lys
 1460 1465 1470
 His Leu Arg Asn Gln Arg Gln Phe Met Asp Glu Gln Ala Ala Glu Arg
 1475 1480 1485
 Glu His Glu Arg Glu Glu Phe Gln Gln Glu Ile Gln Arg Leu Glu Gly
 1490 1495 1500
 Gln Leu Arg Gln Ala Ala Lys Pro Gln Pro Trp Gly Pro Arg Asp Ser
 1505 1510 1515 1520
 Gln Gln Ala Pro Leu Asp Gly Glu Val Glu Leu Leu Gln Gln Lys Leu
 1525 1530 1535
 Arg Glu Lys Leu Asp Glu Phe Asn Glu Leu Ala Ile Gln Lys Glu Ser
 1540 1545 1550
 Ala Asp Arg Gln Val Leu Met Gln Glu Glu Glu Ile Lys Arg Leu Glu
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 Glu Met Asn Ile Asn Ile Arg Lys Lys Val Ala Gln Leu Gln Glu Glu
 1570 1575 1580
 Val Glu Lys Gln Lys Asn Ile Val Lys Gly Leu Glu Gln Asp Lys Glu
 1585 1590 1595 1600
 Val Leu Lys Lys Gln Gln Met Ser Ser Leu Leu Leu Ala Ser Thr Leu
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 Gln Ser Thr Leu Asp Ala Gly Arg Cys Pro Glu Pro Pro Ser Gly Ser
 1620 1625 1630
 Pro Pro Glu Gly Pro Glu Ile Gln Leu Glu Val Thr Gln Arg Ala Leu
 1635 1640 1645
 Leu Arg Arg Glu Ser Glu Val Leu Asp Leu Lys Glu Gln Leu Glu Lys
 1650 1655 1660
 Met Lys Gly Asp Leu Glu Ser Lys Asn Glu Glu Ile Leu His Leu Asn
 1665 1670 1675 1680
 Leu Lys Leu Asp Met Gln Asn Ser Gln Thr Ala Val Ser Leu Arg Glu
 1685 1690 1695
 Leu Glu Glu Glu Asn Thr Ser Leu Lys Val Ile Tyr Thr Arg Ser Ser
 1700 1705 1710
 Glu Ile Glu Glu Leu Lys Ala Thr Ile Glu Asn Leu Gln Glu Asn Gln
 1715 1720 1725
 Lys Arg Leu Gln Lys Glu Lys Ala Glu Glu Ile Glu Gln Leu His Glu
 1730 1735 1740
 Val Ile Glu Lys Leu Gln His Glu Leu Ser Leu Met Gly Pro Val Val
 1745 1750 1755 1760
 His Glu Val Ser Asp Ser Gln Ala Gly Ser Leu Gln Ser Glu Leu Leu
 1765 1770 1775
 Cys Ser Gln Ala Gly Gly Pro Arg Gly Gln Ala Leu Gln Gly Glu Leu
 1780 1785 1790
 Glu Ala Ala Leu Glu Ala Lys Glu Ala Leu Ser Arg Leu Leu Ala Asp
 1795 1800 1805
 Gln Glu Arg Arg His Ser Gln Ala Leu Glu Ala Leu Gln Gln Arg Leu

1810	1815	1820
Gln Gly Ala Glu Glu Ala Ala Glu Leu Gln Leu Ala Glu Leu Glu Arg		
1825	1830	1835
Asn Val Ala Leu Arg Glu Ala Glu Val Glu Asp Met Ala Ser Arg Ile		1840
	1845	1850
Gln Glu Phe Glu Ala Ala Leu Lys Ala Lys Glu Ala Thr Ile Ala Glu		1855
	1860	1865
Arg Asn Leu Glu Ile Asp Ala Leu Asn Gln Arg Lys Ala Ala His Ser		1870
	1875	1880
Ala Glu Leu Glu Ala Val Leu Leu Ala Leu Ala Arg Ile Arg Arg Ala		1885
	1890	1895
Leu Glu Gln Gln Pro Leu Ala Ala Gly Ala Ala Pro Pro Glu Leu Gln		1900
1905	1910	1915
Trp Leu Arg Ala Gln Cys Ala Arg Leu Ser Arg Gln Leu Gln Val Leu		1920
	1925	1930
His Gln Arg Phe Leu Arg Cys Gln Val Glu Leu Asp Arg Arg Gln Ala		1935
	1940	1945
Arg Arg Ala Thr Ala His Thr Arg Val Pro Gly Ala His Pro Gln Pro		1950
	1955	1960
Arg Met Asp Gly Gly Ala Lys Ala Gln Val Thr Gly Asp Val Glu Ala		1965
	1970	1975
Ser His Asp Ala Ala Leu Glu Pro Val Val Pro Asp Pro Gln Gly Asp		1980
1985	1990	1995
Leu Gln Pro Val Leu Val Thr Leu Lys Asp Ala Pro Leu Cys Lys Gln		2000
	2005	2010
Glu Gly Val Met Ser Val Leu Thr Val Cys Gln Arg Gln Leu Gln Ser		2015
	2020	2025
Glu Leu Leu Leu Val Lys Asn Glu Met Arg Leu Ser Leu Glu Asp Gly		2030
	2035	2040
Gly Lys Gly Lys Glu Lys Val Leu Glu Asp Cys Gln Leu Pro Lys Val		2045
	2050	2055
Asp Leu Val Ala Gln Val Lys Gln Leu Gln Glu Lys Leu Asn Arg Leu		2060
2065	2070	2075
Leu Tyr Ser Met Thr Phe Gln Asn Val Asp Ala Ala Asp Thr Lys Ser		2080
	2085	2090
Leu Trp Pro Met Ala Ser Ala His Leu Leu Glu Ser Ser Trp Ser Asp		2095
	2100	2105
Asp Ser Cys Asp Gly Glu Glu Pro Asp Ile Ser Pro His Ile Asp Thr		2110
	2115	2120
Cys Asp Ala Asn Thr Ala Thr Gly Gly Val Thr Asp Val Ile Lys Asn		2125
	2130	2135
Gln Ala Ile Asp Ala Cys Asp Ala Asn Thr Thr Pro Gly Gly Val Thr		2140
2145	2150	2155
Asp Val Ile Lys Asn Trp Asp Ser Leu Ile Pro Asp Glu Met Pro Asp		2160
	2165	2170
Ser Pro Ile Gln Glu Lys Ser Glu Cys Gln Asp Met Ser Leu Ser Ser		2175
	2180	2185
Pro Thr Ser Val Leu Gly Gly Ser Arg His Gln Ser His Thr Ala Glu		2190
	2195	2200
Ala Gly Pro Arg Lys Ser Pro Val Gly Met Leu Asp Leu Ser Ser Trp		2205
	2210	2215
Ser Ser Pro Glu Val Leu Arg Lys Asp Trp Thr Leu Glu Pro Trp Pro		2220
2225	2230	2235
Ser Leu Pro Val Thr Pro His Ser Gly Ala Leu Ser Leu Cys Ser Ala		2240
	2245	2250
Asp Thr Ser Leu Gly Asp Arg Ala Asp Thr Ser Leu Pro Gln Thr Gln		2255
	2260	2265
		2270

Gly Pro Gly Leu Leu Cys Ser Pro Gly Val Ser Ala Ala Ala Leu Ala
 2275 2280 2285
 Leu Gln Trp Ala Glu Ser Pro Pro Ala Asp Asp His His Val Gln Arg
 2290 2295 2300
 Thr Ala Val Glu Lys Asp Val Glu Asp Phe Ile Thr Thr Ser Phe Asp
 2305 2310 2315 2320
 Ser Gln Glu Thr Leu Ser Ser Pro Pro Pro Gly Leu Glu Gly Lys Ala
 2325 2330 2335
 Asp Arg Ser Glu Lys Ser Asp Gly Ser Gly Phe Gly Ala Arg Leu Ser
 2340 2345 2350
 Pro Gly Ser Gly Gly Pro Glu Ala Gln Thr Ala Gly Pro Val Thr Pro
 2355 2360 2365
 Ala Ser Ile Ser Gly Arg Phe Gln Pro Leu Pro Glu Ala Met Lys Glu
 2370 2375 2380
 Lys Glu Val Arg Pro Lys His Val Lys Ala Leu Leu Gln Met Val Arg
 2385 2390 2395 2400
 Asp Glu Ser His Gln Ile Leu Ala Leu Ser Glu Gly Leu Ala Pro Pro
 2405 2410 2415
 Ser Gly Glu Pro His Pro Pro Arg Lys Glu Asp Glu Ile Gln Asp Ile
 2420 2425 2430
 Ser Leu His Gly Gly Lys Thr Gln Glu Val Pro Thr Ala Cys Pro Asp
 2435 2440 2445
 Trp Arg Gly Asp Leu Leu Gln Val Val Gln Glu Ala Phe Glu Lys Glu
 2450 2455 2460
 Gln Glu Met Gln Gly Val Glu Leu Gln Pro Arg Leu Ser Gly Ser Asp
 2465 2470 2475 2480
 Leu Gly Gly His Ser Ser Leu Leu Glu Arg Leu Glu Lys Ile Ile Arg
 2485 2490 2495
 Glu Gln Gly Asp Leu Gln Glu Lys Ser Leu Glu His Leu Arg Leu Pro
 2500 2505 2510
 Asp Arg Ser Ser Leu Leu Ser Glu Ile Gln Ala Leu Arg Ala Gln Leu
 2515 2520 2525
 Arg Met Thr His Leu Gln Asn Gln Glu Lys Leu Gln His Leu Arg Thr
 2530 2535 2540
 Ala Leu Thr Ser Ala Glu Ala Arg Gly Ser Gln Gln Glu His Gln Leu
 2545 2550 2555 2560
 Arg Arg Gln Val Glu Leu Leu Ala Tyr Lys Val Glu Gln Glu Lys Cys
 2565 2570 2575
 Ile Ala Gly Asp Leu Gln Lys Thr Leu Ser Glu Glu Gln Glu Lys Ala
 2580 2585 2590
 Asn Ser Val Gln Lys Leu Leu Ala Ala Glu Gln Thr Val Val Arg Asp
 2595 2600 2605
 Leu Lys Ser Asp Leu Cys Glu Ser Arg Gln Lys Ser Glu Gln Leu Ser
 2610 2615 2620
 Arg Ser Leu Cys Glu Val Gln Gln Glu Val Leu Gln Leu Arg Ser Met
 2625 2630 2635 2640
 Leu Ser Ser Lys Glu Asn Glu Leu Lys Ala Ala Leu Gln Glu Leu Glu
 2645 2650 2655
 Ser Glu Gln Gly Lys Gly Arg Ala Leu Gln Ser Gln Leu Glu Glu Glu
 2660 2665 2670
 Gln Leu Arg His Leu Gln Arg Glu Ser Gln Ser Ala Lys Ala Leu Glu
 2675 2680 2685
 Glu Leu Arg Ala Ser Leu Glu Thr Gln Arg Ala Gln Ser Ser Arg Leu
 2690 2695 2700
 Cys Val Ala Leu Lys His Glu Gln Thr Ala Lys Asp Asn Leu Gln Lys
 2705 2710 2715 2720
 Glu Leu Arg Ile Glu His Ser Arg Cys Glu Ala Leu Leu Ala Gln Glu

	2725		2730		2735
Arg Ser Gln Leu Ser Glu Leu Gln Lys Asp Leu Ala Ala Glu Lys Ser					
	2740		2745		2750
Arg Thr Leu Glu Leu Ser Glu Ala Leu Arg His Glu Arg Leu Leu Thr					
	2755		2760		2765
Glu Gln Leu Ser Gln Arg Thr Gln Glu Ala Cys Val His Gln Asp Thr					
	2770		2775		2780
Gln Ala His His Ala Leu Leu Gln Lys Leu Lys Glu Glu Lys Ser Arg					
2785	2790		2795		2800
Val Val Asp Leu Gln Ala Met Leu Glu Lys Val Gln Gln Gln Ala Leu					
	2805		2810		2815
His Ser Gln Gln Gln Leu Glu Ala Glu Ala Gln Lys His Cys Glu Ala					
	2820		2825		2830
Leu Arg Arg Glu Lys Glu Val Ser Ala Thr Leu Lys Ser Thr Val Glu					
	2835		2840		2845
Ala Leu His Thr Gln Lys Arg Glu Leu Arg Cys Ser Leu Glu Arg Glu					
	2850		2855		2860
Arg Glu Lys Pro Ala Trp Leu Gln Ala Glu Leu Glu Gln Ser His Pro					
2865	2870		2875		2880
Arg Leu Lys Glu Gln Glu Gly Arg Lys Ala Ala Arg Arg Ser Ala Glu					
	2885		2890		2895
Ala Arg Gln Ser Pro Ala Ala Ala Glu Gln Trp Arg Lys Trp Gln Arg					
	2900		2905		2910
Asp Lys Glu Lys Leu Arg Glu Leu Glu Leu Gln Arg Gln Arg Asp Leu					
	2915		2920		2925
His Lys Ile Lys Gln Leu Gln Gln Thr Val Arg Asp Leu Glu Ser Lys					
	2930		2935		2940
Asp Glu Val Pro Gly Ser Arg Leu His Leu Gly Ser Ala Arg Arg Ala					
2945	2950		2955		2960
Ala Gly Ser Asp Ala Asp His Leu Arg Glu Gln Gln Arg Glu Leu Glu					
	2965		2970		2975
Ala Met Arg Gln Arg Leu Leu Ser Ala Ala Arg Leu Leu Thr Ser Phe					
	2980		2985		2990
Thr Ser Gln Ala Val Asp Arg Thr Val Asn Asp Trp Thr Ser Ser Asn					
	2995		3000		3005
Glu Lys Ala Val Met Ser Leu Leu His Thr Leu Glu Glu Leu Lys Ser					
	3010		3015		3020
Asp Leu Ser Arg Pro Thr Ser Ser Gln Lys Lys Met Ala Ala Glu Leu					
3025	3030		3035		3040
Gln Phe Gln Phe Val Asp Val Leu Leu Lys Asp Asn Val Ser Leu Thr					
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Lys Ala Leu Ser Thr Val Thr Gln Glu Lys Leu Glu Leu Ser Arg Ala					
	3060		3065		3070
Val Ser Lys Leu Glu Lys Leu Leu Lys His His Leu Gln Lys Gly Cys					
	3075		3080		3085
Ser Pro Ser Arg Ser Glu Arg Ser Ala Trp Lys Pro Asp Glu Thr Ala					
	3090		3095		3100
Pro Gln Ser Ser Leu Arg Arg Pro Asp Pro Gly Arg Leu Pro Pro Ala					
3105	3110		3115		3120
Ala Ser Glu Glu Ala His Thr Ser Asn Val Lys Met Glu Lys Leu Tyr					
	3125		3130		3135
Leu His Tyr Leu Arg Ala Glu Ser Phe Arg Lys Ala Leu Ile Tyr Gln					
	3140		3145		3150
Lys Lys Tyr Leu Leu Leu Leu Ile Gly Gly Phe Gln Asp Ser Glu Gln					
	3155		3160		3165
Glu Thr Leu Ser Met Ile Ala His Leu Gly Val Phe Pro Ser Lys Ala					
	3170		3175		3180

Glu Arg Lys Ile Thr Ser Arg Pro Phe Thr Arg Phe Arg Thr Ala Val
 3185 3190 3195 3200
 Arg Val Val Ile Ala Ile Leu Arg Leu Arg Phe Leu Val Lys Lys Trp
 3205 3210 3215
 Gln Glu Val Asp Arg Lys Gly Ala Leu Ala Gln Gly Lys Ala Pro Arg
 3220 3225 3230
 Pro Gly Pro Arg Ala Arg Gln Pro Gln Ser Pro Pro Arg Thr Arg Glu
 3235 3240 3245
 Ser Pro Pro Thr Arg Asp Val Pro Ser Gly His Thr Arg Asp Pro Ala
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 Arg Gly Arg Arg Leu Ala Ala Ala Ser Pro His Ser Gly Gly Arg
 3265 3270 3275 3280
 Ala Thr Pro Ser Pro Asn Ser Arg Leu Glu Arg Ser Leu Thr Ala Ser
 3285 3290 3295
 Gln Asp Pro Glu His Ser Leu Thr Glu Tyr Ile His His Leu Glu Val
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 Ser Cys His Pro Met Ile Lys Gln
 3330 3335

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 <213> *Schizosaccharomyces pombe*

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 Leu Ser Ser Leu Ile His Leu Arg Glu Leu Lys Val Asp Ser Asn His
 20 25 30
 Leu Trp Ser Leu Asp Gly Ile Gln His Leu Asp Gly Leu Leu Lys Leu
 35 40 45
 Ser Ala Cys His Asn Arg Ile Lys Glu Leu Ser Phe Thr Asn Ser Asn
 50 55 60
 Leu His Arg Leu Glu Glu Leu Leu Leu Gly Asn Asn Glu Ile Glu Glu
 65 70 75 80
 Ile Glu Glu Ile Ser Ser Leu Gln Asn Leu Met Val Leu Gln Leu Asp
 85 90 95
 Asn Asn Lys Leu Thr Asn Leu Lys Ala Ser Gln Pro Met Ile His Leu
 100 105 110
 Arg Ile Leu Arg Ile Ser Asn Asn Ala Ile His Gln Leu Glu
 115 120 125

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 <212> PRT
 <213> *Saccharomyces cerevisiae*

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 Phe Leu Ser Leu Cys His His Leu Gln Glu Val Asn Leu Ser Tyr Asn
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 Ser Ile Gln Ser Leu Glu Gly Ile Gly Ser Ser Arg Met Lys Lys Leu
 35 40 45
 Asn Leu Ser Asn Asn Glu Ile Asn Gly Ile Ile Asp Phe Glu Gln Leu

50 55 60
 Ile Leu Thr Asn Asn Ser Val Val Gly Gly Trp Leu Thr Val Glu Val
 65 70 75 80
 Leu Asp Leu Ser Asn Asn Asn Ile Ile Gly Val Arg Asn Ile Asn Cys
 85 90 95
 Leu Pro Arg Leu Lys Val Leu Asn Leu Asn Gly Asn Pro Leu Val Ser
 100 105 110
 Ile

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 <213> Homo sapiens

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 Leu Asp Lys Leu Leu Lys Leu Arg Glu Leu Asn Leu Ser Tyr Asn Lys
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 Ile Ser Lys Ile Glu Gly Ile Glu Asn Met Cys Asn Leu Gln Lys Leu
 35 40 45
 Asn Leu Ala Gly Asn Glu Ile Glu His Ile Pro Val Trp Leu Gly Lys
 50 55 60
 Lys Leu Lys Ser Leu Arg Val Leu Asn Leu Lys Gly Asn Lys Ile Ser
 65 70 75 80
 Ser Leu Gln Asp Ile Ser Lys Leu Lys Pro Leu Gln Asp Leu Ile Ser
 85 90 95
 Leu Ile Leu Val Glu Asn Pro Val Val Thr Leu Pro His Tyr Leu Gln
 100 105 110
 Phe Thr Ile Phe His Leu Arg Ser Leu
 115 120

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<220>
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<210> 9
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19

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 <400> 10
 gacgaggcua uugguacuu 19

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 agaccauaaa ggagcugau 19

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 <400> 16
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19

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<223> Pericentrin-B siRNA sequence

<400> 22

gccgugucua agcuugaga

19

<210> 23

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<223> Pericentrin-B siRNA sequence

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<220>

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25

<210> 25

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<223> Primer

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 <400> 28
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 <210> 29
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 <400> 29
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